Chapter 2 Project Alternatives

2.1 Project Description

This chapter describes the alternatives that were developed to address the project's purpose and need, described in Chapter 1, Proposed Project. The evaluation of project alternatives included an assessment of traffic level of service (LOS) and other congestion-relief performance criteria, environmental impacts, and effectiveness in addressing the project's purpose and need. The alternatives considered viable for the I-10 Corridor Project (I-10 CP) are Alternative 1 (No Build), Alternative 2 (One High-Occupancy Vehicle [HOV] Lane in Each Direction), and Alternative 3 (Two Express Lanes in Each Direction), with Transportation Systems Management (TSM)/Traffic Demand Management (TDM) elements included in each alternative, except the No Build Alternative. Conceptual Design Plans for each of the proposed build alternatives are provided in Appendix O, Major Project Features Maps.

The project is located in Los Angeles and San Bernardino counties along the existing Interstate 10 (I-10) corridor from approximately 0.4 mile west of White Avenue in Pomona at LA Post Mile (PM) 44.9 to Live Oak Canyon Road in Yucaipa at SBd PM R37.0. Within the project limits, I-10 is generally an eight-lane divided controlled-access freeway with four general purpose (GP) lanes in each direction and auxiliary lanes along selected portions of the route. Between the Los Angeles/San Bernardino (LA/SB) county line and Haven Avenue, there is one HOV lane in each direction, which is separated from the GP lanes via a 2- to 4-foot-wide striped buffer. The existing lane width is generally 12 feet throughout the corridor except for the HOV lanes west of I-15 which are 11 feet wide. The outside shoulder has the standard width of 10 feet while the inside shoulder varies from 8 feet west of I-15 to 17 feet (not entirely paved) east of I-15. There are 45 existing auxiliary lanes along the project corridor, including 21 in the westbound (WB) direction and 24 in the eastbound (EB) direction.

In San Bernardino County, I-10 (also known as the San Bernardino Freeway) is approximately 50 miles long, from the LA/SB county line to the San Bernardino/ Riverside county line. In this 50-mile stretch, I-10 has important interchanges with other major freeways in the region. These include Interstate 15 (I-15), Interstate 215 (I-215), State Route (State Route) 210, and SR-38. The initial construction of I-10 began in 1953 as SR-26, with two GP lanes in each direction. The highway was converted to I-10 through a route adoption in 1958 and infrastructure upgrade in the

mid 1960s. Inside and outside widening for the third and fourth GP lanes took place throughout the 1970s through 2000s. The addition of the HOV lanes between the LA/SB county line and Haven Avenue was completed in 2000.

The purpose of the I-10 CP is to improve traffic operations on I-10 in San Bernardino County to reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor for the planning design year of 2045.

Project Study Report/Project Development Support

A Project Study Report/Project Development Support (PSR/PDS) for the I-10 improvements from Haven Avenue to Ford Street (EA 08-0C2500) was approved in December 2006. The PSR/PDS proposed extending the existing HOV lanes on I-10 from its current terminus at Haven Avenue in Ontario to Ford Street in Redlands to relieve congestion along the I-10 corridor in San Bernardino County. This alternative would become known as Build Alternative 2.

A Supplemental PSR/PDS was prepared in early 2013 and approved in April 2013 to include an additional alternative (Express Lanes Alternative) to the study. The new alternative would extend the corridor project limits westerly to the LA/SB county line and provide two Express Lanes in each direction from the LA/SB county line to SR-210 and a single Express Lane in each direction from SR-210 to Ford Street. This would become known as Build Alternative 3.

2.2 Project Alternatives

All of the build alternatives are evaluated on criteria that would achieve the objectives of the project to reduce congestion, increase throughput, enhance trip reliability, and accommodate long-term congestion management of the corridor. Some of these criteria include the ability to relieve traffic congestion for the long term, project cost, environmental impacts, and to achieve acceptable LOS along the I-10 corridor. If an alternative does not achieve the intended purpose established for the project, it is eliminated from further consideration.

Two build options are proposed (Alternatives 2 and 3), as well as a No Build Alternative 1. A TSM/TDM Alternative was also considered, but it did not meet the project purpose as a stand-alone alternative; therefore, it has been eliminated from further review. Components from the TSM/TDM Alternative have been incorporated into each of the build alternatives. Descriptions of Alternatives 2 and 3 are provided

in Sections 2.2.1.2 and 2.2.1.3. The TSM/TDM Alternative and the No Build Alternative are described in Sections 2.2.1.3 and 2.2.1.4, respectively. The potential effectiveness of each alternative was rigorously explored and objectively evaluated to achieve the project purpose and address the project need based on informed decision making by the Project Development Team (PDT); input garnered from various State, federal, and local agencies; and comments received from the public during the public scoping meetings. A comparison between the build alternatives and the No Build Alternative is provided in Table 2-11.

2.2.1 Build Alternatives

Alternative 2 – One High-Occupancy Vehicle Lane in Each Direction

Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles, by adding a lane in each direction. Alternative 2 would add one HOV lane in each direction from Haven Avenue to Ford Street and construct a new WB auxiliary lane between Rancho Avenue and La Cadena Drive.

Alternative 3 – Two Express Lanes in Each Direction

Alternative 3 would provide two Express Lanes in each direction of I-10 between the LA/SB county line to California Street in Redlands, and one Express Lane in each direction from California Street to Ford Street in Redlands. Transition areas would be provided on I-10 at the LA/SB county line and at Ford Street to transition the Express Lanes back to existing lane configuration.

2.2.1.1 Common Design Features of the Build Alternatives

Both build alternatives propose to reduce congestion, increase throughput, and enhance trip reliability by providing improvements to the corridor and constructing additional lanes on EB and WB I-10. Though the alignment and design characteristics differ by alternative, there are common design features to each of the two build alternatives, as noted below.

- Provide/maintain pedestrian facilities on overcrossings and along arterials within interchanges.
- Existing sidewalks within the project limits will be maintained or replaced in-kind.
- Existing bike lanes and trails within the project limits will be maintained.
- Pedestrian facilities on arterials being improved would meet current Americans with Disabilities Act (ADA) standards.

- To the extent feasible, existing concrete barriers, temporary railings, metal beam guardrails, and metal thrie-beam barriers in the median of I-10 will be replaced with 56-inch-high concrete barrier to reduce glare.
- In both build alternatives, new chain link fence will be installed along the existing or proposed right-of-way (ROW) where needed.
- Maintenance vehicle pullouts (MVP) would be included in various locations under each build alternative. These locations will be determined during the plans, specifications, and estimate (PS&E) phase.
- Relocation of existing utilities, which includes electric, gas, telephone, cable, water, sewer, oil, gas, and waste water.
- Modification of existing stormwater drainage channels and construction of new drainage and/or retention facilities, and water quality Best Management Practices (BMPs).
- New or reconstructed soundwalls and retaining walls.
- Median lighting is proposed at selected locations along the corridor. Lighting is anticipated to improve headlight sight distance in sag vertical curves (i.e., vertical curves with descending slopes forming a bowl or a valley bottom). Median lighting is anticipated to be on 35-foot-tall poles.
- Replacement and/or new shielded light fixtures.
- Landscaping and hardscaping elements.
- Due to ROW constraints and existing nonstandard features, design exceptions are being requested as part of the proposed project. Examples of such design exceptions include:
  - Horizontal stopping sight distance
  - Vertical stopping sight distance
  - Super-elevation rate
  - Traveled way width
  - Shoulder width and minimum horizontal clearance
  - Median width
  - Vertical clearance
  - Corner sight distance
  - Interchange spacing
  - Partial interchange and isolated off-ramp
  - Ramp lane width
  - Weaving length
  - Access control

  - Access rights opposite ramp terminal
  - Curb ramps
  - Decision sight distance
  - Super-elevation transition
  - Super-elevation of compound curves
  - Compound curves
  - Tangent length between reversing curves
  - Minimum grade
  - Vertical curve length
  - Bridge median
  - Minimum outer separation width
  - Design of freeway entrances and exits
  - Vertical curve beyond exit nose SSD
  - Crossroad grade at ramp terminal
  - Single-lane ramps
  - Successive on-ramps
  - Freeway connector design speed
  - Single-lane connections
  - Branch connections number of lanes
  - Branch connections merge/diverge
  - Access control
- Under both Build Alternatives, Omnitrans express routes would be able to use the HOV or Express Lanes on I-10.
- Although TSM and TDM measures alone do not satisfy the purpose and need of the project, TSM and TDM measures will be incorporated into each of the build alternatives for the proposed project. Every effort will be made to incorporate the following TSM and TDM elements:
  - Improved ramp metering hardware and software and closed-circuit television (CCTV) systems for viewing ramps and nearby arterials
  - At locations of interchange improvements, upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters
  - Additional way-finding signs on freeways and arterials
  - Design of on- and off-ramps to limit impacts to pedestrian and nonmotorized travel and preserve access to bike lanes and trails
  - Intelligent Transportation System (ITS) elements, including fiber-optic and other communication systems for improved connectivity and remote

management; changeable message signs (CMS); CCTV coverage of the entire freeway mainline, ramps, and adjacent arterials; video detection systems; and vehicle detection system (VDS) for volume, speed, and vehicle classification

- Traveler Information Management System improvements to enhance dissemination of real-time information on roadway conditions
- Vanpool initiatives
- Carpooling programs
- Promote and integrate public transit design features
- CCTV with Pan-Tilt-Zoom (PTZ) capability
- Ramp Metering System (RMS)
- VDS

2.2.1.2 Unique Features of the Build Alternatives

A comparison of impacts for each build alternative and the No Build Alternative is provided in Table 2-11.

Alternative 2

Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles.

Alternative 2 improvements extend through 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, I-10/SR-210 interchange), in addition to 21 local street interchanges from Haven Avenue to Ford Street.

Alternative 2 Mainline Improvements

- Add one HOV lane in each direction from Haven Avenue to Ford Street.
- Re-establish existing auxiliary lanes along the corridor.
- Construct new WB auxiliary lane at Cedar Avenue westbound on-ramp
- Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive.

The proposed improvements under Alternative 2 would involve construction work within the following routes and post miles:

- 08-SBd-10 PM 4.7/R37.0
- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-210 PM R33.0/R31.5

- 08-SBd-215 PM 2.1/5.7

In addition to the addition/extensions of the HOV lanes, the project includes reconstruction of demolished structures and/or modification of 3 system interchanges, 19 local street interchanges from Haven Avenue to Ford Street, 2 local street improvements, and structure improvements necessary to accommodate the proposed HOV lanes. Structure improvements for Alternative 2 include replacement of 3 structures and modification of 43 structures along the corridor. Alternative 2 includes new or reconstruction of retaining walls and soundwalls where appropriate. The existing concrete barrier, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-10 would be replaced with a Type 60G concrete barrier for enhanced safety. Existing auxiliary lanes would be replaced in kind, in addition to the construction of additional auxiliary lanes at some locations to improve merging and diverging of vehicles.

Preliminary cost estimates for this alternative are $567 million (approximately $652 million in future dollars), including $446 million in construction, $14 million in ROW and utility relocation, and $100 million in support costs. Figure 2-1 displays the proposed I-10 lane configurations associated with Alternative 2. The HOV lane extension proposed in Alternative 2 is a TSM/TDM measure that would reduce system demand by promoting carpooling.

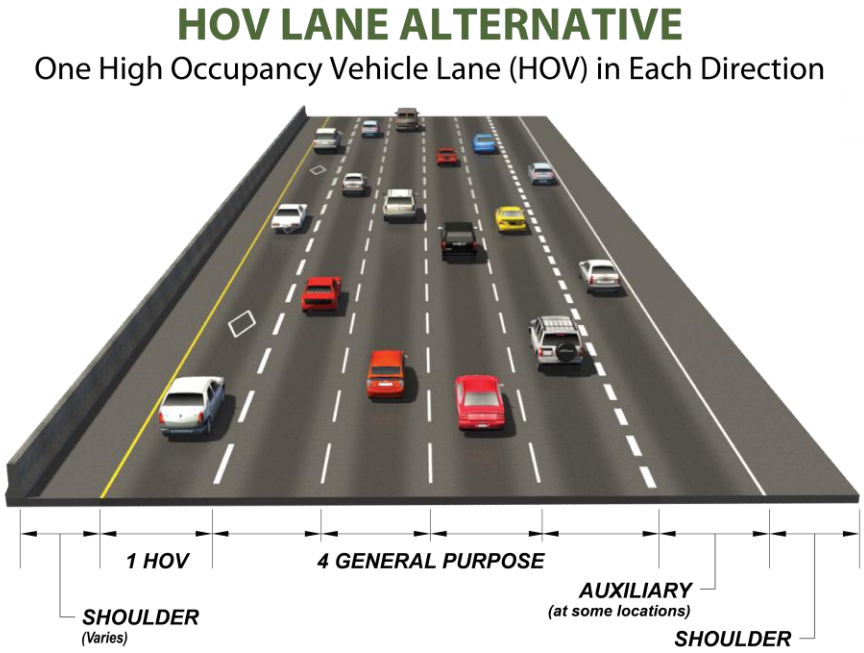

Figure 2-1 Alternative 2 – One HOV Lane in Each Direction

Alternative 2 Connector and Interchange Ramp Improvements

Alternative 2 would require reconstruction of several connector and interchange ramps due to the I-10 widening. Table 2-1 summarizes the proposed connector and ramp improvements along the project corridor.

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Haven	1	Haven EB off-ramp	x			
	2	Haven EB loop on-ramp	x			
	3	Haven EB on-ramp	x			
	4	Haven WB on-ramp	x			
	5	Haven WB loop on-ramp	x			
	6	Haven WB off-ramp	x			
Milliken	7	Milliken EB off-ramp		x		
	8	Milliken EB loop on-ramp				x
	9	Milliken WB on-ramp		x		
	10	Milliken WB loop off-ramp		x		
I-15	11	E10-N15 Connector			x	
	12	E10-S15 Connector			x	
	13	N15-E10 Connector			x	
	14	S15-E10 Connector			x	
	15	N15-W10 Connector			x	
	16	S15-W10 Connector			x	
	17	W10-N/S15 Connector C-D			x	
	18	W10-N15 Connector	x			
	19	W10-S15 Connector	x			
Etiwanda	20	Etiwanda EB C-D off-ramp			x	
	21	Etiwanda EB off-ramp			x	
	22	Etiwanda EB loop on-ramp	x			
	23	Etiwanda EB on-ramp	x			
	24	Valley EB off-ramp	x			

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
	25	Etiwanda EB C-D on-ramp			x	
	26	Etiwanda WB on-ramp	x			
	27	Etiwanda WB loop on-ramp	x			
	28	Valley WB on-ramp	x			
	29	Etiwanda WB off-ramp	x			
Cherry	30	Cherry EB off-ramp		x		
	31	Cherry EB on-ramp	x			
	32	Cherry WB on-ramp		x		
	33	Cherry WB loop on-ramp			x	
	34	Cherry WB off-ramp		x		
Citrus	35	Citrus EB off-ramp		x		
	36	Citrus EB on-ramp		x		
	37	Citrus WB on-ramp		x		
	38	Citrus WB loop on-ramp			x	
	39	Citrus WB off-ramp			x	
Sierra	40	Sierra EB off-ramp				x
	41	Sierra EB on-ramp				x
	42	Sierra WB on-ramp				x
	43	Sierra WB off-ramp				x
Cedar	44	Cedar EB off-ramp		x		
	45	Cedar EB on-ramp			x	
	46	Cedar WB on-ramp			x	
	47	Cedar WB off-ramp			x	
Riverside	48	Riverside EB off-ramp		x		
	49	Riverside EB on-ramp			x	
	50	Riverside WB on-ramp			x	
	51	Riverside WB off-ramp			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Pepper	52	Pepper EB off-ramp			x	
	53	Pepper EB on-ramp				x
	54	Pepper WB on-ramp		x		
	55	Pepper WB off-ramp			x	
Rancho	56	Rancho EB off-ramp				x
	57	Rancho EB on-ramp				x
	58	Rancho WB on-ramp				x
	59	Rancho WB off-ramp				x
La Cadena/9th	60	9th EB off-ramp				x
	61	9th EB on-ramp				x
	62	La Cadena WB on-ramp	x			
	63	9th WB off-ramp		x		
Mt. Vernon	64	Mt. Vernon EB off-ramp			x	
	65	Mt. Vernon EB on-ramp	x			
	66	Mt. Vernon WB on-ramp		x		
	67	Sperry WB off-ramp			x	
I-215	68	E10-N/S215 Connector C-D	x			
	69	E10-N215 Connector	x			
	70	E10-W215 Connector	x			
	71	N215-E10 Connector			x	
	72	S215-E10 Connector	x			
	73	S215-W10 Connector		x		
	74	N215-W10 Connector			x	
	75	W10-N/S215 Connector C-D		x		
	76	W10-N215 Connector	x			
	77	W10-S215 Connector	x			
	78	Sunwest WB on-ramp			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Waterman	79	Redlands EB off-ramp	x			
	80	Waterman EB C-D off-ramp			x	
	81	Waterman EB loop on-ramp	x			
	82	Waterman EB loop off-ramp	x			
	83	Waterman EB on-ramp	x			
	84	Waterman EB C-D on-ramp			x	
	85	Waterman WB on-ramp to N/S215			x	
	86	Carnegie WB hook on-ramp				x
	87	Carnegie WB hook off-ramp			x	
Tippecanoe	88	Tippecanoe EB off-ramp		x		
	89	Tippecanoe EB on-ramp			x	
	90	Tippecanoe WB on-ramp		x		
	91	Tippecanoe WB loop on-ramp			x	
	92	Tippecanoe WB off-ramp			x	
Mountain View	93	Mountain View EB off-ramp			x	
	94	Mountain View EB on-ramp				x
	95	Mountain View WB on-ramp			x	
	96	Mountain View WB off-ramp			x	
California	97	California EB off-ramp			x	
	98	California EB on-ramp			x	
	99	California WB on-ramp			x	
	100	California WB off-ramp			x	
Alabama	101	Alabama EB off-ramp			x	
	102	Alabama WB on-ramp			x	
	103	Alabama WB off-ramp			x	
SR-210	104	E10-W210 Connector			x	
	105	E210-W10 Connector		x		
	106	E210-E10 Connector			x	

Table 2-1 Alternative 2 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 2 Ramp Construction			
			None	Gore	Partial	Full
Tennessee	107	Tennessee EB off-ramp				x
	108	Tennessee EB on-ramp				x
	109	Tennessee WB off-ramp			x	
Eureka/Orange/6th	110	Eureka EB off-ramp		x		
	111	6th EB on-ramp	x			
	112	Orange WB on-ramp	x			
	113	Orange WB loop on-ramp	x			
	114	6th WB off-ramp	x			
University/Cypress	115	University EB off-ramp	x			
	116	Cypress EB on-ramp	x			
	117	University WB on-ramp	x			
	118	Cypress WB off-ramp	x			
Ford	119	Ford EB off-ramp				x
	120	Ford EB on-ramp				x
	121	Ford WB on-ramp				x
	122	Ford WB off-ramp	x			

Alternative 2 Local Street Improvements

Richardson Street, as a local street, and Tennessee Street, as a collector street, are two arterials crossing over I-10 that would need to be replaced with a longer-span structure to accommodate the widened freeway under Alternative 2.

Alternative 2 Structure Improvements

Alternative 2 would necessitate replacement of 3 structures and modification of 44 structures along the corridor. Table 2-2 summarizes the proposed structure improvements under Alternative 2.

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
1	8.16	Haven Ave OC (Lt)	54-1201L	None
2	8.16	Haven Ave OC (Rt)	54-1201R	None
3	9.17	Milliken Ave OC	54-0539	Tie-back wall
4	9.87	E10-N15 Connector OC	54-0913G	None
5	9.91	N15-W10 Connector OC	54-0908G	None
6	9.92	W10-S15 Connector OC	54-1065F	None
7	9.93	Route 15/10 Sep (Lt)	54-0909L	None
8	9.94	Route 15/10 Sep (Rt)	54-0909R	None
9	9.96	S15-E10 Connector OC	54-0910F	None
10	9.98	W10-S15 Bridge over Day Canyon	54-0914F	None
11	10.13	Day Canyon Channel Bridge	54-0351	Widen
12	10.12	W10-S15 Bridge over Day Canyon	54-0351F	None
13	10.13	W10-N15 Bridge over Day Canyon	54-0927F	None
14	10.99	Etiwanda Wash Bridge (Lt)	54-0378L	Widen
15	10.99	Etiwanda Wash Bridge (Rt)	54-0378R	Widen
16	10.99	Etiwanda Wash Bridge (EB Off-Ramp)	54-0378S	Widen
17	11.13	Etiwanda Ave OC	54-0463	None
18	11.35	Valley Blvd WB On-Ramp Separation	54-1214K	None
19	11.50	Valley Blvd EB Off-Ramp UC (Lt)	54-0030L	Widen
20	11.50	Valley Blvd EB Off-Ramp UC (Rt)	54-0030R	Widen
21	11.64	Etiwanda-San Sevaine Channel (Lt)	54-0454L	Widen
22	11.64	Etiwanda-San Sevaine Channel (Rt)	54-0454R	Widen
23	11.64	Etiwanda-San Sevaine Channel (EB On-Ramp)	54-0454S	None
24	11.74	Kaiser Spur OH	54-0416	Widen
25	11.82	San Sevaine Creek Channel	54-0434	Abandon
26	12.14	Mulberry Creek Channel	54-0425M	Abandon
27	13.17	Cherry Ave OC	54-0543	None
28	15.18	Citrus Ave OC	54-0538	None
29	15.70	Cypress Ave OC	54-1280	None
30	16.22	Sierra Ave OC	54-1169	None
31	18.49	Cedar Ave OC	54-0035	Tie-back wall

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
32	19.90	Rialto Channel RCB Bridge	54-1116	None
33	19.97	Riverside Ave OC	54-0536	None
34	20.97	Pepper Ave OC	54-0531	None
35	21.46	Slover Mountain UP	54-0835	None
36	21.96	Rancho Ave OC	54-0817	Tie-back wall
37	22.36	Colton OH (Rt)	54-0464R	Widen
38	22.38	Colton OH (Lt)	54-0464L	Widen
39	22.62	La Cadena Dr UC	54-0462	Widen
40	22.62	La Cadena Dr UC (EB Off-ramp)	54-0462S*	Replace
41	22.71	9th St UC	54-0461	Widen
42	22.82	Pavillion OH (9th WB Off-Ramp)	54-0861K	None
43	22.86	Pavillion Spur OH	54-0460	Widen or abandon
44	23.25	Mt. Vernon Ave OC	54-0459	Tie-back wall
45	23.60	Warm Creek Bridge (Lt)	54-0830L	Widen
46	23.60	Warm Creek Bridge (Rt)	54-0830R	Widen
47	23.80	Santa Ana River Bridge (E10-N/S215)	54-0292G	None
48	23.82	Santa Ana River Bridge (Rt)	54-0292R	Widen
49	23.83	Santa Ana River Bridge (Lt)	54-0292L	Widen
50	24.19	E10-N215 Connector OC	54-0823G	None
51	R24.23	S215-E10 Connector OC	54-0824F	None
52	24.23	Route 215/10 Sep (Lt)	54-0479L	None
53	24.25	Route 215/10 Sep (Rt)	54-0479R	None
54	24.27	W10-N215 Connector OC	54-1064F	None
55	24.30	W10-S215 Connector OC	54-0822F	None
56	24.57	E St/Sunwest Ln WB On-Ramp UC	54-0821F	None
57	24.76	Hunts Ln UC	54-0601	None
58	25.26	Waterman Ave UC	54-0600	Widen
59	25.46	San Timoteo Creek (Carnegie Dr WB On-Ramp)	54-1105K	Widen
60	25.54	San Timoteo Creek	54-0599	Widen
61	26.27	Tippecanoe Ave UC	54-0598	Widen
62	26.81	Richardson St OC	54-0597*	Replace

Table 2-2 Alternative 2 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
63	27.30	Mountain View Ave UC	54-0596	Widen
64	27.64	West Redlands OH/Mission Channel	54-0570	Widen
65	28.30	California St UC	54-0595	Widen
66	28.80	Nevada St UC	54-0594	Widen
67	29.31	Alabama St OC	54-0593	None
68	29.58	E210-W10/Alabama St WB Off-Ramp OC	54-0937G	None
69	29.70	E10-W210 Connector OC	54-0938G	None
70	29.76	E210-E10 Connector OC	54-0929G	None
71	29.82	Tennessee St OC	54-0592*	Replace
72	29.83	W10-W210 over Tennessee St UC	54-0930F	None
73	30.10	New York St/Colton Ave UC	54-0591	None
74	30.38	Texas St UC	54-0583	Widen
75	30.66	Eureka St UC	54-0580	Modify for new soundwall
76	30.88	Orange St UC (Route 10/38 Sep)	54-0581	None
77	31.01	6th St UC	54-0579	Reconstruct median
78	31.41	Church St UC	54-0578	Modify median
79	31.52	Mill Creek Zanja Channel/Redlands OH	54-0472	Modify median
80	31.87	University St UC	54-0582	Modify median
81	31.99	Citrus Ave UC	54-0584	Reconstruct median
82	32.11	Cypress Ave UC	54-0585	Reconstruct median
83	32.36	Palm Ave UC	54-0586	Modify median
84	32.61	Highland Ave UC	54-0587	Reconstruct median
85	33.13	Ford St UC	54-0588	Widen
86	33.29	Redlands Blvd WB Off-Ramp UC	54-0589	Widen

*Structure to be replaced will be assigned a new bridge no.

Alternative 2 Railroad Involvement

Four railroad crossings over or under I-10 would be impacted by the proposed freeway widening, as summarized in Table 2-3. Improvements to railroad crossing facilities would be required to construct Alternative 2.

Table 2-3 Alternative 2 Railroad Crossing Improvements

Railroad and Crossing Location	Proposed Work
UPRR Kaiser Spur OH	Widen
BNSF Colton Crossing OH	Widen
Pavillion Spur OH	Widen or Abandon
BNSF West Redlands OH	Widen

Alternative 2 Drainage Improvements

Several drainage structures along the project corridor would be widened or lengthened as part of the proposed project, as shown in Table 2-4:

Table 2-4 Alternative 2 Drainage Structures

No.	Channel Facility	Approximate Location	Proposed Work
Crossing System			
1	Haven Ave RCB	West of Haven Ave parallel Turner Ave	None
2	California Commerce SD	East of I-15	Extend RCB
3	Day Creek Channel	East of I-15	Widen I-10 bridges
4	Etiwanda Creek	East of I-15	Widen I-10 bridges
5	Etiwanda-San Sevaine Wash	East of Etiwanda Ave	Widen I-10 bridges
6	San Sevaine Creek RCB	East of Etiwanda Ave	Abandon culvert
7	Mulberry Creek RCB	East of Etiwanda Ave	Abandon culvert
8	Rialto Channel RCB	West of Riverside Ave	None
9	Colton SW and NW SD	East of BNSF/Colton Crossing	Lengthen culvert
10	11th Street SD	East of 9th Street	Lengthen culvert
11	Warm (Lytle) Creek	East of Mt. Vernon Ave	Widen I-10 bridge
12	Santa Ana River	East of Mt. Vernon Ave	Widen I-10 bridges
13	San Timoteo Creek	East of Waterman Ave	Widen I-10 bridges
14	Mission Channel	West of California St	Widen I-10 bridge
15	Mill Creek Zanja Channel	West of University Ave	None
Parallel System			
1	I-10 Channel	Etiwanda Ave to Riverside Ave (inside State ROW)	Reconstruct portions

Alternative 2 Pedestrian and Bicycle Facilities

Existing sidewalks within the project limits will be maintained. Under Alternative 2, the project includes reconstruction of Richardson Street, which has one sidewalk along the west side of the roadway, and Tennessee Street, which has one sidewalk along the east side of the roadway. The project would replace the existing sidewalk on these streets in kind. Pedestrian facilities on arterials being improved will meet current ADA standards. In addition, there is a project currently in planning to retrofit existing curb ramps on various cross streets along the I-10 corridor (EA 1C490).

Existing bike lanes and trails within the project limits will be maintained. In addition, new bike lanes (Class II or III) will be incorporated in the design of the proposed arterial improvements at Tennessee Street in Alternative 2. These streets have been identified in their respective local circulation plans as having a bicycle facility.

Transit Operator Planning

As noted, under Alternative 2, Omnitrans express routes would be able to use approximately 24 miles of the HOV lanes on I-10. The I-10 CP would add bus stops at the Sierra Avenue interchange and incorporate associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

Alternative 3

Alternative 3 would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street in Redlands, and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project. The Express Lanes would be price-managed lanes, otherwise known as Express Lanes, in which vehicles not meeting the minimum occupancy requirement, such as an HOV 3+, would need to pay a toll. This is done to encourage ride-sharing along the freeway. Addition of managed lanes is a TDM feature in and of itself, and is a sustainable transportation system management strategy focusing on long-term reliability. Managed lanes promote car-pooling and transit patronage, reduce GHG emissions, and maximize the efficiency of a freeway by increasing person and vehicle throughput, while reducing congestion and delay. “Pricing” provides the ability to actively manage demand and encourage ridesharing and transit. Providing “free-flow” conditions in these lanes provides an incentive for transit agencies to implement future bus services and routes.

Travel is possible through the corridor, even when congestion is severe on the freeway, with obvious benefits to the community as bus and emergency services are not severely delayed. This sustainable solution would enhance livability for people within the corridor. Preliminary cost estimates for this alternative are $1.491 billion (approximately $1.729 billion in future dollars), including $1.175 billion in construction, $88 million in ROW and utility relocation, and $220 million in support costs. Table 2-5 compares the cost (in current dollars) of Alternatives 2 and 3. Figure 2-2 displays the proposed I-10 lane configurations associated with Alternative 3.

Table 2-5 Cost Comparison of Build Alternatives

	Alternative 2	Alternative 3
Preliminary Cost	$567 million	$1.493 billion
Construction	$446 million	$1.177 billion
ROW and Utility Relocation	$14 million	$88 million
Support Costs	$100 million	$220 million

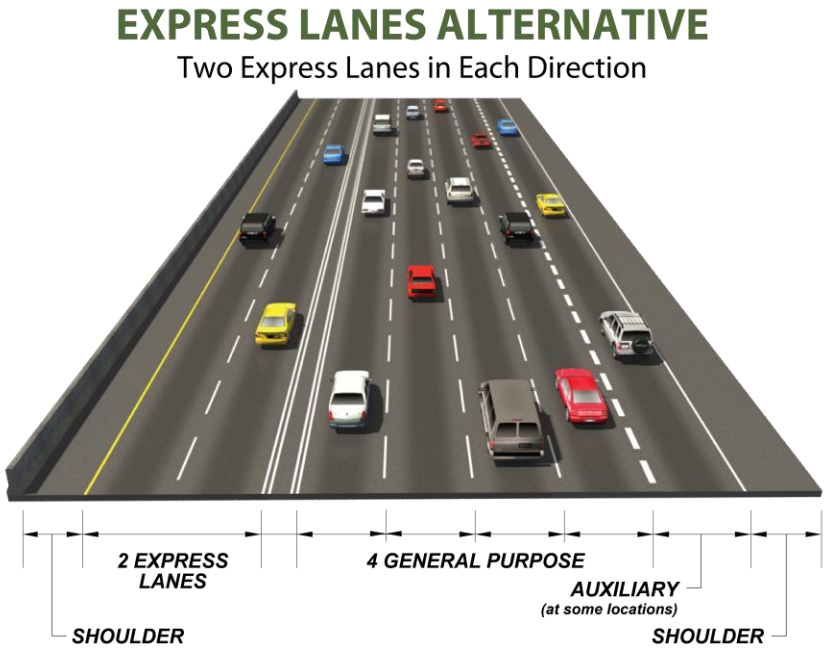

Figure 2-2 Alternative 3 – Two Express Lanes in Each Direction

Alternative 3 project limits pass through 3 system interchanges (I-10/I-15 interchange, I-10/I-215 interchange, and I-10/SR-210 interchange) and 29 local street interchanges, including 1 interchange (Indian Hill Boulevard) in Los Angeles County.

Alternative 3 would require reconstruction of several freeway-to-freeway connectors and interchange ramps to accommodate the I-10 widening.

The proposed improvements under Alternative 3 would involve construction work within the following routes and post miles:

- 07-LA-10 PM 44.9/48.3
- 08-SBd-10 PM 0.0/R37.0
- 08-SBd-15 PM 0.7/4.0
- 08-SBd-38 PM 0.0/0.3
- 08-SBd-83 PM 10.7/11.5
- 08-SBd-210 PM R33.0/R31.5
- 08-SBd-215 PM 2.1/5.7

To accommodate two Express Lanes, the project includes reconstruction and/or modification of existing interchange ramps, local arterials, and structures, including new or reconstruction of retaining walls and soundwalls. Existing concrete barrier, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-10 would be replaced with Type 60G concrete barriers, and median lighting at intermediate access points would be provided. Existing auxiliary lanes would be re-established in kind and additional ones added where warranted.

Alternative 3 Mainline Improvements

- Add one Express Lane in each direction from the LA/SB county line to Haven Avenue to operate jointly with existing HOV lanes as two Express Lanes in each direction
- Add two Express Lanes in each direction from Haven Avenue to California Street
- Add one Express Lane in each direction from California Street to Ford Street
- Provide 10 at-grade access points, with an additional weave lane and 1 as a weave zone
- Provide California Highway Patrol (CHP) enforcement/observation areas in the median at selected locations along the corridor
- Re-establish existing auxiliary lanes along the corridor
- Construct new EB auxiliary lane between Mountain Avenue and Euclid Avenue
- Modify existing WB auxiliary lane at Haven Avenue WB on-ramp to begin at Haven Avenue WB loop on-ramp
- Modify existing EB auxiliary lane at Haven Avenue EB on-ramp to begin at Haven Avenue EB loop on-ramp

- Construct new WB auxiliary lane at Cedar Avenue westbound on-ramp
- Extend WB auxiliary lane preceding the Riverside Avenue off-ramp to Pepper Avenue
- Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive

Ingress/Egress Access Points

Ten at-grade ingress/egress (I/E) access points are proposed in each direction along the project corridor, typically spaced at 3- to 4-mile intervals, to provide access to and from the Express Lanes for all freeway-to-freeway and local street interchanges along the corridor. Median lighting is proposed at I/E access points to and from the Express Lanes and is anticipated to be on 35-foot-tall poles. Nine access points would be provided with an additional weave lane and one as a weave zone. The following locations of these access points were selected to serve heavy traffic interchanges along the corridor and major destinations such as the LA/Ontario International Airport, while meeting the requirements for geometric, safety, and operational constraints:

- Mountain Avenue, Upland
- 6th Street, Ontario
- Haven Avenue, Ontario
- Etiwanda Avenue, Fontana
- Citrus Avenue, Fontana
- Cedar Avenue, Bloomington
- Pepper Avenue, Colton
- Tippecanoe Avenue, San Bernardino
- California Street (transition from 2 to 1 Express Lane)
- Orange Street (weave zone)

Except for the California Street I/E and Orange Street I/E, all other access points are proposed with an additional weave or speed change lane provided between the No. 1 GP lane and the No. 2 Express Lane.

At the California Street I/E, a separate I/E access configuration is provided in the EB direction. At the egress location, the No. 1 EB Express Lane continues while the No. 2 Express Lane becomes a GP lane. A separate ingress opening is provided downstream. In the WB direction, the No. 2 Express Lane is opened up just upstream of the California Street I/E and is anticipated to operate as a weave lane.

The Orange Street I/E is proposed as a weave zone in both directions without a weave lane between the No. 1 GP lane and the No. 2 Express Lane. It will operate similarly to existing HOV lane I/E locations. A weave zone is a portion of the freeway where a single lane is used by vehicles slowing down to exit while other vehicles are using the same lane to increase speed while entering the highway.

Alternative 3 Connector and Interchange Ramp Improvements

Alternative 3 would require reconstruction of several freeway-to-freeway connector and interchange ramps to accommodate the two Express Lanes. Table 2-6 provides a summary of connector and ramp improvements that are required in Alternative 3.

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Indian Hill	1	Indian Hill EB off-ramp	x			
	2	Indian Hill EB on-ramp		x		
	3	Indian Hill WB on-ramp	x			
	4	Indian Hill WB off-ramp		x		
Monte Vista	5	Monte Vista EB off-ramp				x
	6	Monte Vista EB on-ramp			x	
	7	Monte Vista WB on-ramp				x
	8	Monte Vista WB off-ramp				x
Central	9	Central EB off-ramp		x		
	10	Central EB on-ramp				x
	11	Central WB on-ramp				x
	12	Central WB off-ramp			x	
Mountain	13	Mountain EB off-ramp				x
	14	Mountain EB on-ramp				x
	15	Mountain WB on-ramp				x
	16	Mountain WB off-ramp				x
Euclid	17	Euclid EB off-ramp				x
	18	Euclid EB on-ramp				x
	19	Euclid WB on-ramp				x
	20	Euclid WB loop on-ramp				x
	21	Euclid WB off-ramp				x

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
4th	22	4th EB off-ramp				x
	23	4th EB on-ramp				x
	24	4th WB on-ramp				x
	25	4th WB off-ramp				x
Vineyard	26	Vineyard EB off-ramp				x
	27	Vineyard EB on-ramp				x
	28	Vineyard WB on-ramp				x
	29	Vineyard WB loop on-ramp				x
	30	Vineyard WB off-ramp				x
Archibald	31	Archibald EB off-ramp	x			
	32	Holt EB on-ramp			x	
	33	Archibald EB on-ramp			x	
	34	Archibald WB on-ramp	x			
	35	Holt WB off-ramp			x	
	36	Archibald WB off-ramp			x	
Haven	37	Haven EB off-ramp			x	
	38	Haven EB loop on-ramp				x
	39	Haven EB on-ramp			x	
	40	Haven WB on-ramp				x
	41	Haven WB loop on-ramp				x
	42	Haven WB off-ramp			x	
Milliken	43	Milliken EB off-ramp	x			
	44	Milliken EB loop on-ramp			x	
	45	Milliken WB on-ramp			x	
	46	Milliken WB loop off-ramp		x		
I-15	47	E10-N15 Connector			x	
	48	E10-S15 Connector			x	
	49	N15-E10 Connector			x	
	50	S15-E10 Connector			x	

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
	51	N15-W10 Connector			x	
	52	S15-W10 Connector			x	
	53	W10-N/S15 Connector			x	
	54	W10-N15 Connector			x	
	55	W10-S15 Connector			x	
Etiwanda	56	Etiwanda EB C-D off-ramp			x	
	57	Etiwanda EB off-ramp			x	
	58	Etiwanda EB loop on-ramp	x			
	59	Etiwanda EB on-ramp	x			
	60	Valley EB off-ramp			x	
	61	Etiwanda EB C-D on-ramp			x	
	62	Etiwanda WB on-ramp		x		
	63	Etiwanda WB loop on-ramp	x			
	64	Valley WB on-ramp	x			
	65	Etiwanda WB off-ramp	x			
Cherry	66	Cherry EB off-ramp			x	
	67	Cherry EB on-ramp			x	
	68	Cherry WB on-ramp		x		
	69	Cherry WB loop on-ramp			x	
	70	Cherry WB off-ramp		x		
Citrus	71	Citrus EB off-ramp			x	
	72	Citrus EB on-ramp			x	
	73	Citrus WB on-ramp			x	
	74	Citrus WB loop on-ramp			x	
	75	Citrus WB off-ramp			x	
Sierra	76	Sierra EB off-ramp				x
	77	Sierra EB on-ramp				x
	78	Sierra WB on-ramp				x
	79	Sierra WB off-ramp				x

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Cedar	80	Cedar EB off-ramp			x	
	81	Cedar EB on-ramp			x	
	82	Cedar WB on-ramp				x
	83	Cedar WB off-ramp			x	
Riverside	84	Riverside EB off-ramp			x	
	85	Riverside EB on-ramp			x	
	86	Riverside WB on-ramp			x	
	87	Riverside WB off-ramp			x	
Pepper	88	Pepper EB off-ramp			x	
	89	Pepper EB on-ramp				x
	90	Pepper WB on-ramp				x
	91	Pepper WB off-ramp				x
Rancho	92	Rancho EB off-ramp				x
	93	Rancho EB on-ramp				x
	94	Rancho WB on-ramp				x
	95	Rancho WB off-ramp				x
La Cadena/9th	96	9th EB off-ramp				x
	97	9th EB on-ramp				x
	98	La Cadena WB on-ramp			x	
	99	9th WB off-ramp		x		
Mt. Vernon	100	Mt. Vernon EB off-ramp			x	
	101	Mt. Vernon EB on-ramp			x	
	102	Mt. Vernon WB on-ramp				x
	103	Sperry WB off-ramp				x
I-215	104	E10-N/S215 Connector		x		
	105	E10-N215 Connector	x			
	106	E10-S215 Connector	x			
	107	N215-E10 Connector			x	
	108	S215-E10 Connector			x	

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
	109	S215-W10 Connector			x	
	110	N215-W10 Connector			x	
	111	W10-N/W215 Connector		x		
	112	W10-N215 Connector	x			
	113	W10-S215 Connector	x			
	114	Sunwest WB on-ramp				x
Waterman	115	Redlands EB off-ramp	x			
	116	Waterman EB C-D off-ramp			x	
	117	Waterman EB loop on-ramp	x			
	118	Waterman EB loop off-ramp	x			
	119	Waterman EB on-ramp			x	
	120	Waterman EB C-D on-ramp			x	
	121	Waterman WB on-ramp to 215			x	
	122	Carnegie WB hook on-ramp				x
	123	Carnegie WB hook off-ramp			x	
Tippecanoe	124	Tippecanoe EB off-ramp			x	
	125	Tippecanoe EB on-ramp			x	
	126	Tippecanoe WB on-ramp			x	
	127	Tippecanoe WB loop on-ramp			x	
	128	Tippecanoe WB off-ramp			x	
Mountain View	129	Mountain View EB off-ramp				x
	130	Mountain View EB on-ramp				x
	131	Mountain View WB on-ramp				x
	132	Mountain View WB off-ramp				x
California	133	California EB off-ramp				x
	134	California EB on-ramp				x
	135	California WB on-ramp				x
	136	California WB off-ramp				x

Table 2-6 Alternative 3 Connector and Interchange Ramp Improvements

Interchange	No.	Ramps	Alternative 3			
			None	Gore	Partial	Full
Alabama	137	Alabama EB off-ramp			x	
	138	Alabama WB on-ramp			x	
	139	Alabama WB off-ramp			x	
SR-210	140	E10-W210 Connector			x	
	141	E210-W10 Connector		x		
	142	E210-W10 Connector			x	
Tennessee	143	Tennessee EB off-ramp				x
	144	Tennessee EB on-ramp				x
	145	Tennessee WB off-ramp			x	
Eureka/Orange/6th	146	Eureka EB off-ramp	x			
	147	6th EB on-ramp	x			
	148	Orange WB on-ramp	x			
	149	Orange WB loop on-ramp	x			
	150	6th WB off-ramp	x			
University/Cypress	151	University EB off-ramp	x			
	152	Cypress EB on-ramp	x			
	153	University WB on-ramp	x			
	154	Cypress WB off-ramp	x			
Ford	155	Ford EB off-ramp				x
	156	Ford EB on-ramp				x
	157	Ford WB on-ramp				x
	158	Ford WB off-ramp	x			

Alternative 3 Local Street Improvements

Nine arterial streets crossing under or over I-10 would be reconstructed by widening and lengthening to accommodate the I-10 improvements, as listed below. Eight of these are overcrossing structures, which would need to be replaced with a longer-span structure to accommodate the widened freeway. The Monte Vista Avenue

undercrossing would also need to be replaced to accommodate the proposed widening of the local street.

1. Monte Vista Avenue
2. San Antonio Avenue
3. Euclid Avenue
4. Sultana Avenue
5. Campus Avenue
6. 6th Street
7. Vineyard Avenue
8. Richardson Street
9. Tennessee Street

Two arterials that parallel I-10 would be modified as part of the proposed project improvements:

1. Palo Verde Street between Mills Avenue and Monte Vista Avenue (will reduce landscaped parkway along north side)
2. J Street between 3rd Street and Pennsylvania Avenue (will widen pavement on north side, reduce pavement width on south side)

Alternative 3 Railroad Involvement

Five railroad crossings over or under I-10 would be impacted and require bridgework, as shown in Table 2-7.

Table 2-7 Alternative 3 Railroad Crossing Improvements

Railroad and Crossing Location	Proposed Work
UPRR Kaiser Spur OH	Widen
UPRR Slover Mountain UP	Replace
BNSF Colton Crossing OH	Widen
UPRR Pavillion Spur OH	Widen or Abandon
BNSF West Redlands OH	Widen

Alternative 3 Structure Improvements

Alternative 3 would necessitate construction replacement of 12 structures, and modification of 59 structures. Table 2-8 summarizes the proposed structure improvements under Alternative 3.

Table 2-8 Alternative 3 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
1	47.74	Indian Hill Blvd UC (LA County)	53-0860	Maintain
2	48.00	College Ave Box Culvert (LA County)	53-1019	Maintain
3	0.01	Mills Ave UC	54-0453	Widen
4	0.32	San Antonio Wash Bridge	54-0451	Widen
5	0.68	Monte Vista Ave UC	54-0450*	Replace
6	1.23	Central Ave UC	54-1186	Widen
7	1.75	Benson Ave UC	54-0448	Widen
8	2.37	Mountain Ave UC	54-1187	Widen
9	2.92	San Antonio Ave OC	54-0446*	Replace
10	3.47	Euclid Ave OC (Route 83/10 Sep)	54-0445*	Replace
11	3.75	Sultana Ave OC	54-0444*	Replace
12	4.02	Campus Ave OC	54-0443*	Replace
13	4.33	6th St OC	54-0442*	Replace
14	4.70	West Cucamonga Channel Box Culvert	54-1117	Modify
15	4.88	Grove Ave UC	54-0441	Widen
16	5.24	4th St UC	54-0440	Widen
17	6.10	Vineyard Ave OC	54-0439*	Replace
18	6.70	Cucamonga Wash Bridge (Lt)	54-0438L	Widen
19	6.70	Cucamonga Wash Bridge (Rt)	54-0438R	Widen
20	6.80	Holt Blvd Off-Ramp UC (Lt)	54-0437L	Widen
21	6.80	Holt Blvd Off-Ramp UC (Rt)	54-0437R	Widen
22	6.90	Archibald Ave EB Off-Ramp/Holt Blvd UC	54-1107	Maintain
23	7.16	Archibald Ave OC	54-1166	Maintain
24	8.16	Haven Ave OC (Lt)	54-1201L	Tie-back wall
25	8.16	Haven Ave OC (Rt)	54-0560R	Tie-back wall
26	9.17	Milliken Ave OC	54-0539	Tie-back wall
27	9.87	E10-N15 Connector OC	54-0913G	Maintain
28	9.91	N15-W10 Connector OC	54-0908G	Maintain
29	9.92	W10-S15 Connector OC over Railroad	54-1065F	Maintain

Table 2-8 Alternative 3 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
30	9.93	Route 15/10 Sep (Lt)	54-0909L	Maintain
31	9.94	Route 15/10 Sep (Rt)	54-0909R	Maintain
32	9.96	S15-E10 Connector OC	54-0910F	Maintain
33	9.98	W10-S15 Connector OC	54-0914F	Maintain
34	10.12	Day Canyon Channel Bridge	54-0351	Widen
35	10.12	W10-S15 Bridge over Day Canyon	54-0351F	Maintain
36	10.13	W10-N15 Bridge over Day Canyon	54-0927F	Maintain
37	10.99	Etiwanda Wash Bridge (Lt)	54-0378L	Widen
38	10.99	Etiwanda Wash Bridge (Rt)	54-0378R	Widen
39	10.99	Etiwanda Wash Bridge (EB Off-Ramp)	54-0378S	Widen
40	11.13	Etiwanda Ave OC	54-0463	Maintain
41	11.35	Valley Blvd WB On-Ramp Separation	54-1214K	Maintain
42	11.50	Valley Blvd EB Off-Ramp UC (Lt)	54-0030L	Widen
43	11.50	Valley Blvd EB Off-Ramp UC (Rt)	54-0030R	Widen
44	11.64	Etiwanda-San Sevaine Channel (Lt)	54-0454L	Widen
45	11.64	Etiwanda-San Sevaine Channel (Rt)	54-0454R	Widen
46	11.64	Etiwanda-San Sevaine Channel (EB On-Ramp)	54-0454S*	Replace
47	11.74	Kaiser Spur OH	54-0416	Widen
48	11.82	San Sevaine Creek Channel	54-0434	Abandon
49	12.14	Mulberry Creek Channel	54-0425M	Abandon
50	13.17	Cherry Ave OC	54-1292	Maintain
51	15.18	Citrus Ave OC	54-1293	Maintain
52	15.73	Cypress Ave OC	54-1280	Maintain
53	16.22	Sierra Ave OC	54-1169	Maintain
54	R18.49	Cedar Ave OC	54-0035	Tie-back wall
55	R19.90	Rialto Channel RCB Bridge	54-1116	Maintain
56	R19.97	Riverside Ave OC	54-1267	Maintain
57	R20.97	Pepper Ave OC	54-1324	Maintain
58	R21.46	Slover Mountain UP	54-0835*	Replace

Table 2-8 Alternative 3 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
59	R21.96	Rancho Ave OC	54-0817	Tie-back wall
60	R22.36	Colton OH (Rt)	54-0464R	Widen
61	R22.38	Colton OH (Lt)	54-0464L	Widen
62	R22.62	La Cadena Dr UC	54-0462	Widen
63	R22.62	La Cadena Dr UC (EB Off-Ramp)	54-0462S*	Replace
64	R22.71	9th St UC	54-0461	Widen
65	R22.82	Pavillion OH (9th St WB Off-Ramp)	54-0861K	Maintain
66	R22.86	Pavillion Spur OH	54-0460	Widen or Abandon**
67	R23.25	Mt. Vernon Ave OC	54-0459	Tie-back wall
68	R23.60	Warm Creek Bridge (Lt)	54-0830L	Widen
69	R23.60	Warm Creek Bridge (Rt)	54-0830R	Widen
70	R23.80	Santa Ana River Bridge (E10-N/S215)	54-0292G	Maintain
71	R23.82	Santa Ana River Bridge (Rt)	54-0292R	Widen
72	R23.83	Santa Ana River Bridge (Lt)	54-0292L	Widen
73	R24.19	E10-N215 Connector OC	54-0823G	Maintain
74	R24.23	S215-E10 Connector OC	54-0824F	Maintain
75	R24.23	Route 215/10 Sep (Lt)	54-0479L	Maintain
76	R24.25	Route 215/10 Sep (Rt)	54-0479R	Maintain
77	R24.27	W10-N215 Connector OC	54-1064F	Maintain
78	R24.30	W10-S215 Connector OC	54-0822F	Maintain
79	R24.57	E St/Sunwest Ln WB On-Ramp UC	54-0821F	Maintain
80	R24.76	Hunts Ln UC	54-0601	Widen
81	R25.26	Waterman Ave UC	54-0600	Widen
82	R25.46	San Timoteo Creek (Carnegie Dr WB On-Ramp)	54-1105K	Widen
83	R25.54	San Timoteo Creek	54-0599	Widen
84	R26.27	Tippecanoe Ave UC	54-0598	Widen
85	R26.81	Richardson St OC	54-0597*	Replace
86	R27.30	Mountain View Ave UC	54-0596	Widen
87	R27.64	West Redlands OH/Mission Channel	54-0570	Widen

Table 2-8 Alternative 3 Structures Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
88	R28.30	California St UC	54-0595	Widen
89	R28.80	Nevada St UC	54-0594	Widen
90	R29.31	Alabama St OC	54-0593	Maintain
91	R29.58	E210-W10/Alabama St WB Off-Ramp UC	54-0937G	Maintain
92	R29.70	E10-W210 Connector OC	54-0938G	Maintain
93	R29.76	E210-E10 Connector OC	54-0929G	Maintain
94	R29.82	Tennessee St OC	54-0592*	Replace
95	R29.83	W10-W210/Tennessee St UC	54-0930F	Maintain
96	R30.10	New York St/Colton Ave UC	54-0591	Maintain
97	R30.38	Texas St UC	54-0583	Widen
98	R30.66	Eureka St UC	54-0580	Modify to add soundwall
99	R30.88	Orange St UC (Route 10/38 Sep)	54-0581	Maintain
100	R31.01	6th St UC	54-0579	Reconstruct median
101	R31.41	Church St UC	54-0578	Modify median
102	R31.52	Mill Creek Zanja Channel/Redlands OH	54-0472	Modify median
103	R31.87	University St UC	54-0582	Modify median
104	R31.99	Citrus Ave UC	54-0584	Reconstruct median
105	R32.11	Cypress Ave UC	54-0585	Reconstruct median
106	R32.36	Palm Ave UC	54-0586	Modify median
107	R32.61	Highland Ave UC	54-0587	Reconstruct median
108	R33.13	Ford St UC	54-0588	Widen
109	R33.29	Redlands Blvd WB Off-Ramp UC	54-0589	Widen

*Structure to be replaced will be assigned a new bridge number.

**Railroad facility is no longer in service; structure could be widened or abandoned in place by filling with earth material.

Alternative 3 Drainage Improvements

Several major drainage structures that either cross or run parallel to the project corridor would be modified as part of the proposed project, as shown in Table 2-9.

Table 2-9 Alternative 3 Drainage Structures

No.	Channel Facility	Approximate Location	Proposed Work
Crossing System			
1	College Ave RCB	Near LA/SBd County Line	None
2	San Antonio Wash	East of Mills Ave	Widen I-10 bridge
3	Palmetto Ave SD & Vault	East of Mountain Ave	Extend RCB
4	West Cucamonga Channel	East of 6th St	Widen I-10 bridge
5	Cucamonga Wash	East of Vineyard Ave	Widen I-10 bridges
6	Haven Ave RCB	West of Haven Ave parallel Turner Ave	Extend RCB
7	California Commerce SD	East of I-15	Extend RCB
8	Day Creek Channel	East of I-15	Widen I-10 bridges
9	Etiwanda Creek	East of I-15	Widen I-10 bridges
10	Etiwanda-San Sevaine Wash	East of Etiwanda Ave	Widen I-10 bridges
11	San Sevaine Creek RCB	East of Etiwanda Ave	Abandon culvert
12	Mulberry Creek RCB	East of Etiwanda Ave	Abandon culvert
13	Rialto Channel RCB	West of Riverside Ave	None
14	Colton SW & NW SD	East of BNSF/Colton Crossing	Lengthen culvert
15	11th Street SD	East of 9th St	Lengthen culvert
16	Warm (Lytle) Creek	East of Mt. Vernon Ave	Widen I-10 bridge
17	Santa Ana River	East of Mt. Vernon Ave	Widen I-10 bridges
18	San Timoteo Creek	East of Waterman Ave	Widen I-10 bridges
19	Mission Channel	West of California St	Widen I-10 bridge
20	Mill Creek Zanja Channel	West of University Ave	None
Parallel System			
1	Montclair Storm Drain	North side of I-10 from west of Monte Vista Ave to Central Ave (outside State ROW)	Reconstruct
2	I-10 Channel	Etiwanda Ave to Riverside Ave (inside State ROW)	Reconstruct portions

Alternative 3 Pedestrian and Bicycle Facilities

Existing sidewalks within the project limits would be maintained. Under Alternative 3, sidewalks would be provided on both sides of proposed arterial improvement locations, including Monte Vista Avenue, San Antonio Avenue, Euclid Avenue, Sultana Avenue, Campus Avenue, and 6th Street. Reconstruction of Vineyard Avenue, Richardson Street, and Tennessee Street in Alternative 3 would provide one continuous sidewalk on these streets, similar to the current condition. Pedestrian facilities on arterials being improved would meet current ADA standards. In addition, there is a project currently in planning to retrofit existing curb ramps on various cross streets along the I-10 corridor (EA 1C490).

Existing bike lanes and trails within the project limits would be maintained. Under Alternative 3, new bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Monte Vista Avenue, Euclid Avenue, Vineyard Avenue, and Tennessee Street. These streets have been identified in their respective local circulation plans as having a bicycle facility.

Transit Operator Planning

As described in Section 2.2.1.1, under both build alternatives, Omnitrans express routes would be able to use the HOV or Express Lanes on I-10. Alternative 3 proposes to add bus stops at the on-ramps of the Mountain Avenue interchange and the Sierra Avenue interchange, and it would also incorporate associated intersection, pedestrian access, and traffic signal improvements to accommodate the Omnitrans express bus services.

California Highway Patrol Enforcement

CHP enforcement areas would be provided on I-10 at selected locations, including on-ramps and medians. Median lighting is proposed at CHP enforcement/observation areas and is anticipated to be on 35-foot-tall poles, as previously noted.

Nine CHP observation/enforcement areas are proposed in the WB direction and eight in the EB direction to provide enforcement for the Express Lanes, as listed below.

<u>Westbound</u>

1. WB between Central Avenue and Mountain Avenue
2. WB between Mountain Avenue and Euclid Avenue
3. WB between Vineyard Avenue and Archibald Avenue
4. WB between Cherry Avenue and Citrus Avenue

5. WB between Sierra Avenue and Cedar Avenue
6. WB between Riverside Avenue and Pepper Avenue
7. WB between La Cadena Drive and Mt. Vernon Avenue
8. WB near Mountain View Avenue interchange
9. WB between California Street and Alabama Street

Eastbound

1. EB between Mountain Avenue and Euclid Avenue
2. EB between Vineyard Avenue and Archibald Avenue
3. EB between Cherry and Citrus Avenue
4. EB between Sierra Avenue and Cedar Avenue
5. EB between Cedar Avenue and Riverside Avenue
6. EB between 9th Street and Mt. Vernon Avenue
7. EB between Mountain View Avenue and California Street
8. EB between California Street and Alabama Street

Toll Infrastructure

The tolling and signage infrastructure needed to operate the Express Lanes are features unique to Alternative 3. This infrastructure would include:

- Toll gantries (toll reader) with transponder readers and high-speed digital cameras located at the I-10 I/E access points in each direction of I-10
- Nine CHP enforcement areas proposed in the WB direction
- Eight CHP enforcement areas proposed in the EB direction
- Signage approaching Express Lane entry and exit points, including variable message signs before entry points indicating the toll amount
- Complete CCTV coverage of the entire Express Facility to provide security for tolling equipment and to enable quick response to breakdowns and other incidents in the Express Lanes
- Fiber optics linking the electronic infrastructure to a centralized toll operations office

The policies governing operation of the Express Lanes in Alternative 3 are additional features unique to this alternative.

Preliminary Express Lane Operation Policies

The policies under which the Express Lanes in Alternative 3 would be operated have not been finalized, but the preliminary policies are presented here to provide the

current plans anticipated to operate the Express Lanes. Final decisions on operating policies would be made during PS&E and prior to opening of the project if Alternative 3 is identified as the alternative to be constructed. Operating policies would be needed for:

- Type of tolling (i.e., static, variable, or dynamic);
- Toll discounts for HOVs and others;
- Maximum target volume in the Express Lanes to maintain speed and minimize congestion;
- Method of determining toll amounts;
- Methods of toll collection, including requirements for use of transponders;
- Methods of toll enforcement; and
- Provision of an Express Lane service patrol.

The current plan for each of these topics is addressed below. As stated, if Alternative 3 is identified as the preferred alternative, final decisions on operating policies would be made during PS&E and prior to opening of the project; therefore, plans for each of the following topics are subject to change as the project further develops.

Type of Tolling. The type of tolling to be used in the Express Lanes is anticipated to be dynamic. Dynamic tolling varies toll amounts minute to minute in response to the real-time volume of traffic in the Express Lanes.

According to the FHWA Freeway Management and Operations Handbook, implementation of variable or congestion pricing utilizes lane capacity more efficiently[1]. Toll amounts are adjusted to manage the volume of traffic in the Express Lanes and avoid congestion. As a result of limited congestion, there would be more throughput per Express Lane than per GP lane during periods of congestion in the GP lanes. With the additional throughput in the Express Lanes, there is a related reduction in GP lane traffic, thereby reducing congestion in the GP lanes. Under either variable or dynamic tolling, both the Express Lanes and GP lanes would benefit. Dynamic pricing would increase or lower the toll amount based on demand, while variable tolling would increase or reduce the toll price based on time of day or week. These tolling strategies encourage drivers to use the lanes when the GP lanes are congested or to utilize the GP lanes when the tolling lanes are congested. Static, or fixed, tolling would not be used because it does not vary by hour of the day or day

[1] "Managed Lanes." *Freeway Management and Operations Handbook*. FHWA. 2006.

of the week. Consequently, static tolling does not provide the flexibility in toll amounts needed to manage congestion in the corridor.

Toll Discounts. The current toll policy is to allow HOV with three or more occupants to use the Express Lanes for free or a discounted toll. The Express Lanes would be free to buses, vanpools, motorcycles, transit vehicles, CHP vehicles, California Department of Transportation (Caltrans) vehicles, and emergency vehicles (i.e., police, fire, ambulance). While vehicles that meet specified emission standards of the California Air Resources Board (ARB) and identified through decals issued by the Department of Motor Vehicles (DMV) are currently allowed to use the HOV lanes in California, this legislation will expire before the opening of the Express Lanes. With the implementation of Express Lanes, the San Bernardino Associated Governments (SANBAG) will work with local agencies, Caltrans, and the State legislature to determine whether these vehicles would be considered toll-paying traffic.

Maximum Target Volume in the Express Lanes. During peak periods of traffic congestion, the volume of traffic using the Express Lanes would be managed to maintain optimal speeds and minimize congestion in the Express Lanes. This would be accomplished by managing the volume of traffic in the Express Lanes. Toll amounts would be increased when a certain vehicle threshold is met to manage the demand and to keep traffic moving; toll amounts would be adjusted down when volumes fall below the threshold to attract more traffic into the Express Lanes.

Toll Amounts. Toll amounts would be set at the time the Express Lanes are open to traffic. It is anticipated that toll rates to use the entire 33 miles of the proposed I-10 Express Lanes from the LA/SB county line to Ford Street in Redlands would range from $2.00 to $7.15 (approximately $0.06 to $0.22 per mile). For comparison purposes, the current tolls on Orange County Transportation Authority's (OCTA) 10-mile SR-91 Express Lanes range from $1.45 to $9.85 (approximately $0.15 to $0.98 per mile), depending on the hour of the day and day of the week. Toll amounts would be displayed on variable message signs just before each Express Lane ingress point. Such signs would be similar to the sign shown in Figure 2-3. Variable message signs are necessary because the toll amount will change due to dynamic tolling.

Figure 2-3 Example of Sign at Express Lane Ingress Points Showing Tolls for Use of Express Lanes

Methods of Toll Collection. The tolling operation is proposed to be fully electronic, with no tollbooths to make cash payments or for controlling access for a trip. Based on current technology, vehicles would be identified through either an electronic transponder or through video-imaging/license plate recognition. To qualify for free or discounted travel, such as an HOV 3+, a vehicle must use a transponder. A FasTrak™ transponder uses radio frequency to transmit user information to an overhead reader. Each transponder transmits a unique signal that identifies the transponder unit/user. There would be no traditional toll booths where motorists stop and pay cash. Drivers with a registered transponder would be charged to their account immediately following their use of the Express Lanes. Rental cars would likely be given a stated grace period to pay their one-time toll either online or over the phone. Transponders may be equipped with a switch that motorists would utilize to declare their vehicle occupancy. A transponder with such a switch is shown in Figure 2-4. The position of the switch would be used to assess the correct toll amount based on HOV/occupancy status.

Figure 2-4 Transponder with Occupancy Switch

Transponders would be read and tolls charged at toll gantries. A toll gantry is the overhead structure on which transponder readers would be mounted. The 33-mile-long I-10 Express Lanes corridor is divided into four segments: County Line to I-15, I-15 to I-215, I-215 to SR-210, and SR-210 to Ford Street. To discourage short trips in the Express Lanes, which cause additional weaving and congestion, a toll would be collected for use of each toll segment of the Express Lanes, regardless of the distance traveled within that segment. A toll gantry would be located along each separately tolled segment of the Express Lanes where transponders would be read to charge the toll. All toll equipment would be able to operate and share information to State and federal requirements and standards.

Methods of Toll Enforcement. Ensuring that each motorist pays the correct toll and minimizing toll evasion enforcement would be an essential component of the operation of the Express Lanes. Examples of toll violations that may be monitored and how surveillance may be conducted are as follows. Using a transponder set to an occupancy that results in a discounted toll charge to which the motorist is not entitled would be a toll violation. These violations would be enforced by CHP officers in the field. Enforcement of the HOV occupancy requirement would be accomplished in a manner similar to that used to enforce the HOV occupancy requirement; officers would use visual checks to determine if occupancy requirements are met. Each enforcement area would be equipped with a toll gantry and a transponder reader. Enforcement areas would be lighted to assist officers in the area with visual inspection of the number of occupants in a vehicle. Enforcement areas would also be equipped with a set of lighted indicators that would be illuminated to show an enforcement officer stationed at the enforcement area whether the vehicle has a transponder and what vehicle occupancy the transponder declares. The lighted indicators would be positioned to allow an officer to view both the lighted indicators and traffic at the same time.

Other electronic methods of enforcement would also be used, including digital imagery of vehicles passing a toll gantry without a transponder. The digital images would be used to determine the license plate number of the vehicle without a transponder, and toll violation notices would be mailed to vehicle owners to collect both the unpaid toll and a toll violation penalty.

Express Lane Service Patrol. A service patrol similar to the existing Freeway Service Patrol would be provided during the heavy traffic periods, comparable to the current service patrol provided on the SR-91 Express Lanes. The service patrol would be

available to assist motorists with a disabled vehicle, move disabled vehicles out of Express Lanes onto the shoulder, and assist CHP in removing vehicles from the Express Lanes following a collision.

Toll Operations Office. A Toll Operations Office would be needed to administer the tolling operation. No building would be built; it is assumed office space would be leased for administrative tasks near the corridor. The office location has not yet been identified. The Toll Operations Office would determine the range of toll amounts, given time of day or week and demand, and display them on variable message signs near the ingress points to the Express Lanes. Among the Toll Operations Office principal duties would be distribution of transponders to motorists, establishing and maintaining toll accounts for Express Lane users receiving transponders, charging toll accounts based on transponder readings along the Express Lanes, and providing periodic account statements to account holders.

2.2.1.3 Transportation System Management and Transportation Demand Management Alternatives

A TSM/TDM Alternative was analyzed for the I-10 corridor. This alternative did not meet the project purpose as a stand-alone alternative and is further described in Section 2.2.5, Alternatives Considered but Eliminated from Further Discussion. The TSM/TDM Alternative consists primarily of operational investments, policies, and actions aimed at improving traffic flow, promoting travel safety, and increasing transit usage and rideshare participation. Although this alternative would provide minimal enhancement of operations, it would not maximize throughput or provide trip reliability for the corridor.

TSM consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals at intersections to improve existing peak-hour traffic flow and to reduce queuing of vehicles. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Multimodal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled (VMT), as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel experience. Typical activities within this alternative reduce the amount of single-occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Promoting mass transit and facilitating nonmotorized alternatives are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting.

Although TSM and TDM measures alone do not satisfy the purpose and need of the project, every effort will be made to incorporate the TSM/TDM components described in Section 2.2.1.1, Common Design Features of the Build Alternatives, into the proposed build alternatives.

2.2.2 No Build Alternative

The No Build Alternative would not provide any improvements to the I-10 corridor within the project limits. No additional lanes or interchange improvements would be provided, except by projects identified in the growth/cumulative impacts section of this environmental document. The No Build Alternative configuration is not expected to accommodate future traffic demand, and existing nonstandard geometric features would not be corrected. Congestion along the corridor would continue and is expected to worsen by 2045.

Direct effects of the No Build Alternative would include continued deterioration of LOS and local interchange operations, in addition to exacerbating the existing "degraded" freeway congestion conditions (California HOV Degradation Determination Report, Caltrans, 2013). Indirect and cumulative effects of the No Build Alternative are projected to increase effects on the communities related to increased commute times and traffic diversion through adjacent neighborhoods. Additionally, the No Build Alternative could increase the amount of time the corridor cities and users/travelers have to endure construction-related effects associated with addressing the corridor needs through many smaller projects completed over an extended period of time. Figure 2-5 displays the current I-10 lane configurations associated with the No Build Alternative.

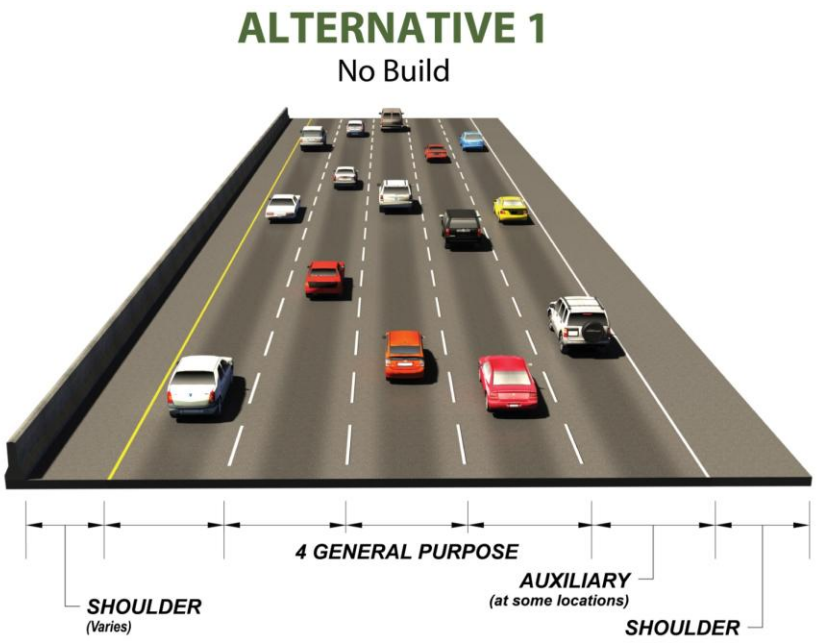

Figure 2-5 Alternative 1 – No Build Alternative

The No Build Alternative is not considered a viable project alternative because it would not achieve the project's purpose. The No Build Alternative would not meet the following aspects of the project's purpose:

- Reduce congestion;
- Increase throughput;
- Enhance trip reliability; and
- Accommodate long-term congestion management of the corridor for the planning design year of 2045.

2.2.3 Construction

Construction of the proposed project is planned to commence in 2019 and is anticipated to be open for use by 2024. For Alternative 2, the project is anticipated to be implemented using the design-bid-build delivery process and constructed over a period of 42 months (3.5 years) under one construction contract.

Due to the scale of Alternative 3 and the need to minimize impacts and maintain traffic during construction, the proposed improvements are envisioned to be constructed in two construction stages from west to east with some overlap, as shown in Table 2-10. Although there is overlap in the construction of two contracts, the overall construction period within this overlap area will be less than 12 months. Alternative 3 is anticipated to utilize a design-build delivery process. Alternative 3 is

anticipated to be constructed in two project contracts over a period of 60 months (5 years) with Contract 1 covering the proposed improvements from the LA/SB county line to I-15 and Contract 2 covering the improvements from I-15 to Ford Street. Construction would intermittently move along the length of the alignment, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 *Code of Federal Regulations* [CFR] 93.123(c)(5)).

Table 2-10 Alternative 3 Construction Contract Breakdown

Contract	Post Miles and Limits	Length	Start Construction	End Construction/ Begin Revenue Service
Contract 1	07-LA-10 PM 44.9/48.3 08-SBd-10-PM 0.0/13.0 0.4 mile west of White Avenue overcrossing to 0.2 mile west of Cherry Avenue overcrossing	16.4 miles	2019	2022
Contract 2	08-SBd-10 PM 8.0/R37.0 0.2 mile west of Haven Avenue overcrossing to Live Oak Canyon Road overcrossing	29 miles	2021	2024

Construction of interchange improvements, consisting of freeway ramp reconstruction, local arterial improvements, and overcrossing structure replacement, is envisioned to be staggered throughout the corridor to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. If feasible, arterials and overcrossing improvements that add capacity over the existing condition would be constructed from west to east for both project contracts in efforts to ease traffic congestion.

Closures of the I-10 mainline, branch connectors, interchange ramps, and local arterials may be overnight, short-term, during an extended weekend (i.e., 55-hour window from Friday night to Monday morning), or long-term, as discussed in Section 3.1.4, Community Impacts. Lane reductions and restrictions are also anticipated on mainline, connector, ramp, and arterial roadway facilities to accommodate construction activities. Long-term closure of arterial overcrossings may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service.

Existing pedestrian and bicycle facilities within the project limits are anticipated to be maintained during construction, except where the arterial roadways are closed to traffic during construction. A Transportation Management Plan (TMP) will be prepared prior to construction to identify methods to minimize impacts to pedestrian and bicycle traffic. In either of the build alternatives, the project may require periodic or temporary closure of the Santa Ana River Trail and the Class I bicycle facility along the river during widening of the Santa Ana River bridges. During construction, the trail on at least one riverbank would remain open at all times.

Borrow/Fill Sites

Borrow/fill is required to construct the proposed project; however, no material borrow sites have been identified for this project. For Alternative 2, approximately 993,000 cubic yards of excavation is anticipated, 290,000 cubic yards of which would be reused on site as fill material. For Alternative 3, approximately 2.2 million cubic yards of excavation is anticipated, 842,000 cubic yard of which would be reused on site as embankment fill. Based on the above quantities, it is most likely that the project would export soil from the project area. If borrow site(s) is required to construct the project, borrow sites would be identified after the PS&E phase of the project, and the contractor will be required to comply with environmental requirements for import of borrow material and/or export of fill material.

Borrow/fill sites are typically identified when a construction contractor has been retained during the construction phase of the project. The contractor will determine borrow/fill sites for the proposed project and will be responsible for ensuring that all import material comes from permitted commercial material providers and does not contain hazardous materials, in accordance with 2010 Caltrans Standard Specifications 19-7, which requires the construction contractor to submit permit, license, agreements for each imported borrow site and that the borrow material "free of unsuitable material, including organic matter."

Construction Staging Areas

Construction staging area (CSA) locations will be finalized during PS&E. Areas within State ROW may be used as CSA locations. In addition, several private parcels along the project corridor have been identified for potential use as construction staging areas. These parcels are vacant at the time of this report preparation, and covered by the project environmental studies. Environmental studies did not reveal any adverse issues with these properties. However, future investigations will take place as needed during the PS&E phase to develop the final determination of

construction staging areas, and every effort will be made to locate these away from homes/sensitive receptors. If new sites are proposed that have not been studied as part of the project footprint, then environmental evaluations will be conducted for any impacts to these areas.

Construction Access

The construction contractor's access to the construction site would be within existing local roadways, interchange ramps, and the freeway mainline, generally within the project study area limits.

2.2.4 Comparison of Alternatives

Each of the build alternatives requires a commitment of resources and would result in environmental impacts. This commitment is balanced with the ability to meet the project purpose and need and the effects of not implementing the project (the No Build Alternative). Table 2-11 provides a comparison between the build alternatives and the No Build Alternative.

After the public circulation period, all comments will be considered, and the PDT will identify a Preferred Alternative and make the final determination of the project's effect on the environment. Caltrans will certify that the project complies with the California Environmental Quality Act (CEQA), prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations (SOC) for impacts that will not be mitigated below a level of significance, if necessary, and certify that the findings and SOC have been considered prior to project approval. Caltrans will then file a Notice of Determination (NOD) with the State Clearinghouse that will identify whether the project will have significant impacts, if mitigation measures were included as conditions of project approval, that findings were made, and that an SOC was adopted. With respect to the National Environmental Policy Act (NEPA), Caltrans, as assigned by the Federal Highway Administration (FHWA), will document and explain its decision regarding the identified alternative, project impacts, and mitigation measures in a Record of Decision (ROD) published in the *Federal Register*.

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction)
Project Cost		
None	Preliminary Cost: $567 million (approximately $659 million in future dollars) Construction: $446 million ROW and Utility Relocation: $14 million Support Costs: $100 million	Preliminary Cost: $1.491 billion (approximately $1.729 billion in future dollars) Construction: $1.175 billion ROW and Utility Relocation: $88 million Support Costs: $220 million
Construction Duration		
None	42 Months	60 Months
Ramp Closures		
None	The following ramps were identified to potentially result in closures and detours for a period up to 30 days: • La Cadena Drive EB off-ramp • E Street/Sunwest Lane WB on-ramp • Waterman Avenue EB on-ramp • Tennessee Street EB off-ramp	The following ramps were identified to potentially result in closures and detours for a period up to 30 days: • Monte Vista Avenue WB off-ramp • Monte Vista Avenue WB on-ramp • Monte Vista Avenue EB off-ramp • Monte Vista Avenue EB on-ramp • Central Avenue EB on-ramp • Central Avenue WB off-ramp • 4th Street EB off-ramp • Etiwanda Avenue EB loop on-ramp • Etiwanda Avenue EB on-ramp • 9th Street EB off-ramp • E Street/Sunwest Lane WB on-ramp • Waterman Avenue EB on-ramp • Alabama Street EB off-ramp • Tennessee Street EB off-ramp
Pedestrian and Bicycle Facilities		
None	Existing sidewalks within the project limits would be maintained. The project would replace the existing sidewalks on Richardson Street and Tennessee Street in-kind. Pedestrian facilities on arterials being improved would meet current ADA standards. Existing bike lanes and trails within the project limits will be maintained. New bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Tennessee Street in Alternative 2.	Existing sidewalks within the project limits would be maintained. Sidewalks would be provided on both sides of Monte Vista Avenue, San Antonio Avenue, Euclid Avenue, Sultana Avenue, Campus Avenue, and 6th Street. Reconstruction of Vineyard Avenue, Richardson Street, and Tennessee Street in Alternative 3 would provide one continuous sidewalk on these streets, similar to the existing condition. Pedestrian facilities on arterials being improved would meet current ADA standards. Existing bike lanes and trails within the project limits would be maintained. New bike lanes (Class II or III) would be incorporated in the design of the proposed arterial improvements at Monte Vista Avenue, Euclid Avenue, Vineyard Avenue, and Tennessee Street.
Parking Effects		
None	A total of 22 parking spaces would be permanently removed after implementation of Alternative 2. The parking loss would result entirely in Fontana, at commercial locations, for public parking and employee parking.	A total of 210 parking spaces would be permanently removed after implementation of Alternative 3. Most of the parking losses would occur in Fontana and Montclair. In Fontana, commercial, light industrial, and parking at one multi-family residential property would be affected by Alternative 3. After replacement parking is implemented, mall parking at the Baralat Property would experience the greatest impact. Montclair would lose an estimated 17 street parking spaces, as well as church parking and mall parking. In Colton, 30 street parking spaces would be removed as a result of Alternative 3.

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction)
Drainage		
None	Drainage structures along the project corridor that would be improved under Alternative 2 include the following: • California Commerce SD • Day Creek Channel • Etiwanda Creek • Etiwanda-San Sevaine Wash • San Sevaine Wash • Mulberry Creek RCB • Colton SW & NW SD • 11th Street Storm Drain • Warm (Lytle) Creek • Santa Ana River • San Timoteo Creek • Mission Channel • I-10 Channel	Drainage structures along the project corridor that would be improved under Alternative 3 include the following: • San Antonio Wash • Palmetto Ave SD & Vault • West Cucamonga Channel • Cucamonga Wash • Haven Avenue RCB • California Commerce SD • Day Creek Channel • Etiwanda Creek • Etiwanda-San Sevaine Wash • San Sevaine Creek RCB • Mulberry Creek RCB • Colton SW & NW SD • 11th Street Storm Drain • Warm (Lytle) Creek • Santa Ana River • San Timoteo Creek • Mission Channel • Montclair SD • I-10 Channel
Mainline Improvements		
None	• Add one HOV lane in each direction from Haven Avenue to Ford Street • Re-establish existing auxiliary lanes along the corridor • Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive	• Add one Express Lane in each direction from the LA/SB county line to Haven Avenue to operate jointly with existing HOV lanes as two Express Lanes in each direction • Add two Express Lanes in each direction from Haven Avenue to California Street • Add one Express Lane in each direction from California Street to Ford Street • Provide 10 at-grade access points, 9 with an additional weave lane and 1 as a weave zone • Provide CHP enforcement/observation areas in the median at selected locations along the corridor • Re-establish existing auxiliary lanes along the corridor • Construct new EB auxiliary lane between Mountain Avenue and Euclid Avenue • Modify existing WB auxiliary lane at Haven Avenue WB on-ramp to begin at Haven Avenue WB loop on-ramp • Modify existing EB auxiliary lane at Haven Avenue EB on-ramp to begin at Haven Avenue EB loop on-ramp • Extend WB auxiliary lane preceding the Riverside Avenue off-ramp to Pepper Avenue • Construct new WB auxiliary lane between Rancho Avenue and La Cadena Drive Proposed entry into and exits from the toll lanes will be provided by 10 at-grade I/E access points in each direction along the project corridor, including 9 additional weave lanes: • Mountain Avenue, Upland • 6th Street, Ontario • Haven Avenue, Ontario • Etiwanda Avenue, Fontana • Citrus Avenue, Fontana • Cedar Avenue, Bloomington • Pepper Avenue, Colton

Table 2-11 Comparison of Alternatives

Alternative 1 (No Build)	Alternative 2 (One HOV Lane in Each Direction)	Alternative 3 (Two Express Lanes in Each Direction)
		• Tippecanoe Avenue, San Bernardino • California Street (transition from 2 to 1 Express Lane) • Orange Street
Connector Ramp and Interchange Ramp Improvements		
None	• Alternative 2 would require reconstruction of 15 connector ramps. • Alternative 2 would require reconstruction of 70 interchange ramps.	• Alternative 3 would require reconstruction of 19 connector ramps. • Alternative 3 would require reconstruction of 113 interchange ramps.
Local Street Improvements		
None	Richardson Street, as a local street, and Tennessee Street, as a collector road, are two arterials crossing over I-10 that would need to be replaced with a longer-span structure to accommodate the widened freeway under Alternative 2.	Nine arterial streets crossing over I-10 would be reconstructed by widening and lengthening to accommodate the I-10 improvements, as listed below: • Monte Vista Avenue • San Antonio Avenue • Euclid Avenue • Sultana Avenue • Campus Avenue • 6th Street • Vineyard Avenue • Richardson Street • Tennessee Street Two arterials that parallel to I-10 would be modified as part of the proposed project improvements: • Palo Verde Street between Mills Avenue and Monte Vista Avenue • J Street between 3rd Street and Pennsylvania Avenue (near Rancho and Colton OH)
Structural Improvements		
None	Alternative 2 would necessitate replacement of 3 structures and modification of 43 structures along the corridor.	Alternative 3 would necessitate construction of 1 new structure, replacement of 12 structures, and modification of 58 structures.
Railroad Crossing Facilities		
None	The following railroad crossing facilities would be improved in order to construct Alternative 2: • Union Pacific Railroad (UPRR) and Kaiser Spur Overhead (OH) (widen) • UPRR Colton Crossing OH (widen) • Pavillion Spur OH (widen or abandon) • Burlington Northern Santa Fe (BNSF) West Redlands OH (widen)	The following railroad crossing facilities would be improved in order to construct Alternative 3: • UPRR and Kaiser Spur OH (widen) • UPRR Slover Mountain UP (replace) • UPRR Colton Crossing OH (widen) • UPRR Pavillion Spur OH (widen or abandon) • BNSF West Redlands OH (widen)

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2.2.4.1 Identification of the Locally Preferred Alternative

After comparing and weighing the benefits and impacts of all feasible alternatives, SANBAG determined that Alternative 3 was the Locally Preferred Alternative (LPA) on July 2, 2014. This decision was reached after it was determined that traditional methods of improving freeways would not accommodate the projected population growth of this region and associated increase in traffic. SANBAG determined that Alternative 3 is both engineering and financially viable, and it provides a transportation improvement that is sustainable over time. The final Preferred Alternative has not yet been identified and will occur after the public review and comment period.

By designating Alternative 3 as the LPA prior to circulation of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for public review, SANBAG provided disclosure of its preference among the alternatives to the public, as well as to other agencies that may have an interest in the project. SANBAG's basis for identifying Alternative 3 as the LPA can be summarized as follows:

- Traffic Management: Through dynamic pricing, which adjusts toll rates up or down in response to traffic demand, the Express Lanes are able to maintain optimal traffic flow even during peak-hour traffic periods. A free-flowing freeway lane can carry upwards of 1,800 to 2,000 vehicles per hour per lane (vphpl), whereas a congested lane typically carries 1,000 to 1,200 vehicles or less. That is, two Express Lanes can carry as many vehicles as four congested GP lanes during periods of peak congestion.
- Benefit to GP Lanes: By providing a significant increase in corridor capacity and then managing the additional capacity to its fullest potential, Express Lanes will also provide a significant benefit to motorists who remain in the GP lanes. The combination of additional lane miles and traffic management greatly increases the overall corridor capacity, which is expected to reduce the GP lane travel time upwards of 50 percent during peak hours compared to a No Build Alternative. All corridor users will benefit from Express Lanes, whether they choose to use the Express Lanes or not.
- Funding: The toll revenue generated by the I-10 Express Lanes supplements traditional funding, enabling SANBAG to construct the needed freeway improvements to accommodate the projected increase in population.
- Choice: Express Lanes provide a new travel choice for residents of San Bernardino County. They also provide an incentive for HOV as HOV 3+ will use

the Express Lanes facility for free or at a discounted rate. Other corridor travelers will have the choice to pay a toll in exchange for the reliable trip time provided by the Express Lanes. The ability to travel in a predictable amount of time is a significant quality of life improvement compared to traveling a congested corridor.

- Equity: An Equity Study Report developed for the I-10 and I-15 corridors found that Express Lanes are a more equitable method of funding major freeway projects, because only the users choosing to use the Express Lanes facility pay a fee, as opposed to a broader local, State, or federal tax where both users and nonusers pay. The study also found that low-income users would also benefit significantly from the project in terms of faster travel times in the GP lanes and by providing a new travel option available to all income levels.
- Consistency: The Express Lanes meet the Regional Transportation Plan (RTP) to develop an Express Lane network on freeways throughout the Los Angeles metropolitan area.
- HOV Federal Operating Standards: The change in management of the HOV lane west of Haven Avenue to the Los Angeles county line to a tolled Express Lane and the addition of a second tolled Express Lane in each direction would provide a reduced toll to HOVs meeting the minimum occupancy requirement. The Express Lanes would address the current degraded condition of the HOV lanes (congested and not meeting the federal operating standard for HOV lanes) in this area.
- Comprehensive HOV System: The Express Lanes, which would charge a reduced toll to HOVs meeting the occupancy requirement, would meet the objective of providing a comprehensive HOV lane system.

2.2.5 Alternatives Considered but Eliminated from Further Discussion

Below is a brief description of alternatives that were considered during the project development process but were eliminated from consideration because they do not meet the project purpose. These alternatives are not viable and therefore are not fully analyzed in this Draft EIR/EIS. Also included below is the rationale for removing each alternative from further consideration.

Value Analysis

In December 2009, a Value Analysis (VA) was performed for Alternative 2 to evaluate the performance of the proposed project design and develop alternate methods to improve value of the proposed improvements. Two design variations of Alternative 2 were reviewed at that time. Through a 6-day study, the VA team

developed five ideas to help improve the proposed design features and reduce the environmental impacts associated with the proposed improvements. Of the proposed VA alternatives, one was accepted by the PDT and has been incorporated into the current project design for both build alternatives.

- Relocate the utility towers in the freeway median outside of Caltrans ROW and construct I-10 widening to the inside to eliminate replacement of the Etiwanda Avenue Overcrossing (OC).

In March 2013, a second VA was conducted for Alternative 3. Through a 6-day study, the VA team developed eight ideas that aim to improve the proposed design and implementation, and reduce the environmental impacts. Of the proposed VA alternatives, five have been accepted by the PDT for incorporation (where practical and verified viable), including:

- Utilize Superior Performing Asphalt Pavement technology (Superpave) in lieu of hot-mix asphalt (HMA).
- Modify ramps at Haven Avenue interchange to avoid ROW acquisitions.
- Replace/rehabilitate two outside lanes with 40-year concrete pavement when performing widening in both directions.
- Use precast/prestressed concrete girders for bridge replacements, where feasible, to reduce traffic impacts and closures.
- Initially construct two Express Lanes in each direction in Segment 1 through the I-15/I-10 system interchange to Cherry Avenue and then one Express Lane in each direction in Segments 2 through 4.

Detailed documentation of the VA alternatives is provided in a report titled *Value Analysis Study Report,* dated July 2013, prepared by Value Management Strategies, Inc. (VMS).

Alternative 4

Alternative 4 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands (as in Alternative 2) and add a GP lane in each direction from the LA/SB county line to SR-210. Figure 2-6 displays the I-10 lane configurations associated with Alternative 4.

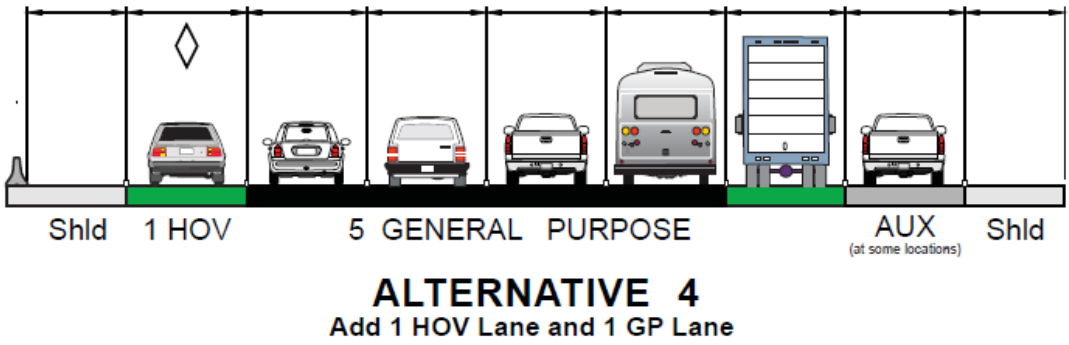

Figure 2-6 Alternative 4 – One HOV Lane and One GP Lane in Each Direction

The benefits of this alternative are:

- The existing HOV lane west of Haven Avenue would be extended east to Ford Street. This would provide a continuous HOV facility along a more extensive portion of the I-10 corridor in the urbanized area.
- The easterly extension of the HOV lane would meet the objective of providing a comprehensive HOV lane system.
- An additional GP lane would provide more capacity for all corridor motorists.

The HOV lane west of Haven Avenue is currently degraded (i.e., congested and not meeting the federal operating standard for HOV lanes), and it will further deteriorate for the planning years of 2025/2045.

The congestion, existing and anticipated, in the single HOV lane would limit the ability to improve HOV trip reliability without conversion to HOV3+. Addressing the degraded HOV condition would require consideration of increasing the occupancy requirement to 3 persons per vehicle, which would result in unused capacity in the HOV lane and therefore more congestion in the GP lanes.

Portions of the new HOV lane east of Haven Avenue to Ford Street will be over capacity when it is planned to be opened to traffic in 2025, as shown in Figure 2-7. By 2045, the single HOV lane will be over capacity for most of the corridor, as shown in Figure 2-8. Figures 2-7 and 2-8 show the forecast HOV lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The volume shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of a single HOV lane, which is 1,600 vehicles per hour and which is

limited to that value by the inability to pass without merging into the GP lanes. For those segments where HOV demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-7 and 2-8 with a dashed red line. For lanes where HOV demand is not forecast to exceed capacity, throughput is the same as demand.

Figures 2-9 and 2-10 show the forecast GP lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The figures also show with a solid red line the capacity of the GP lanes in each segment, which is 1,850 vehicles per lane per hour (or 9,250 vehicles per hour in the 5 GP lanes west of California Street and 7,400 vehicles per hour in the 4 GP lanes east of California Street). For those segments where demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-9 and 2-10 with a dashed red line.

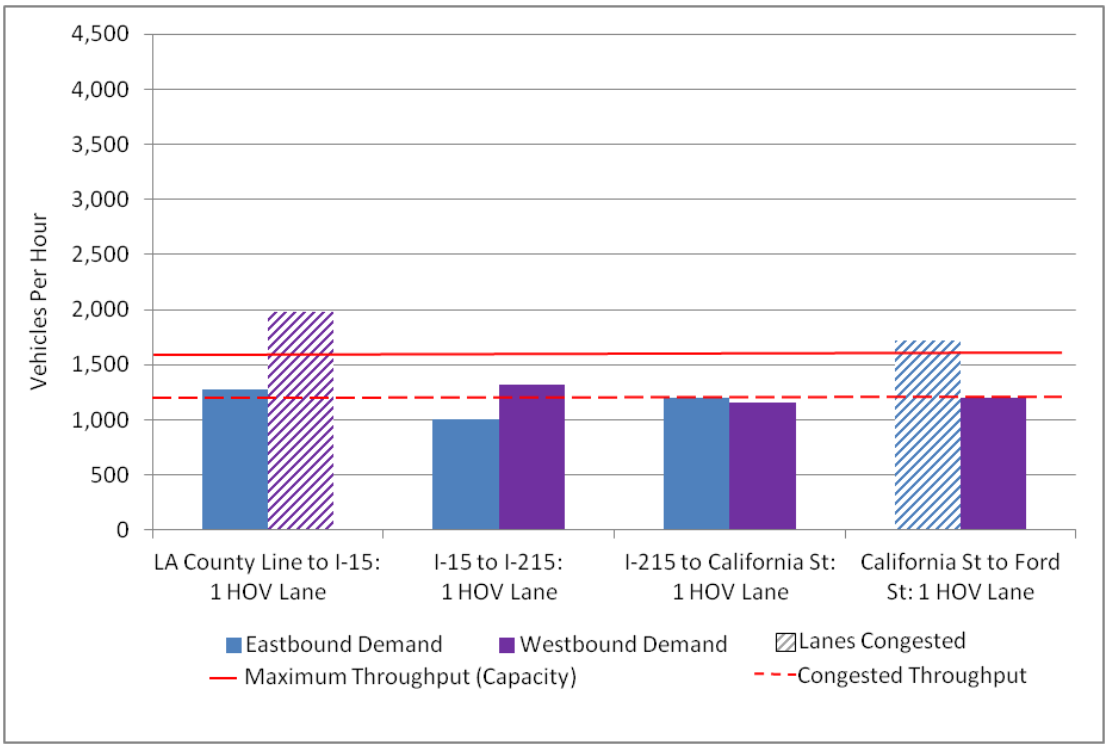

Figure 2-7 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: HOV Lanes

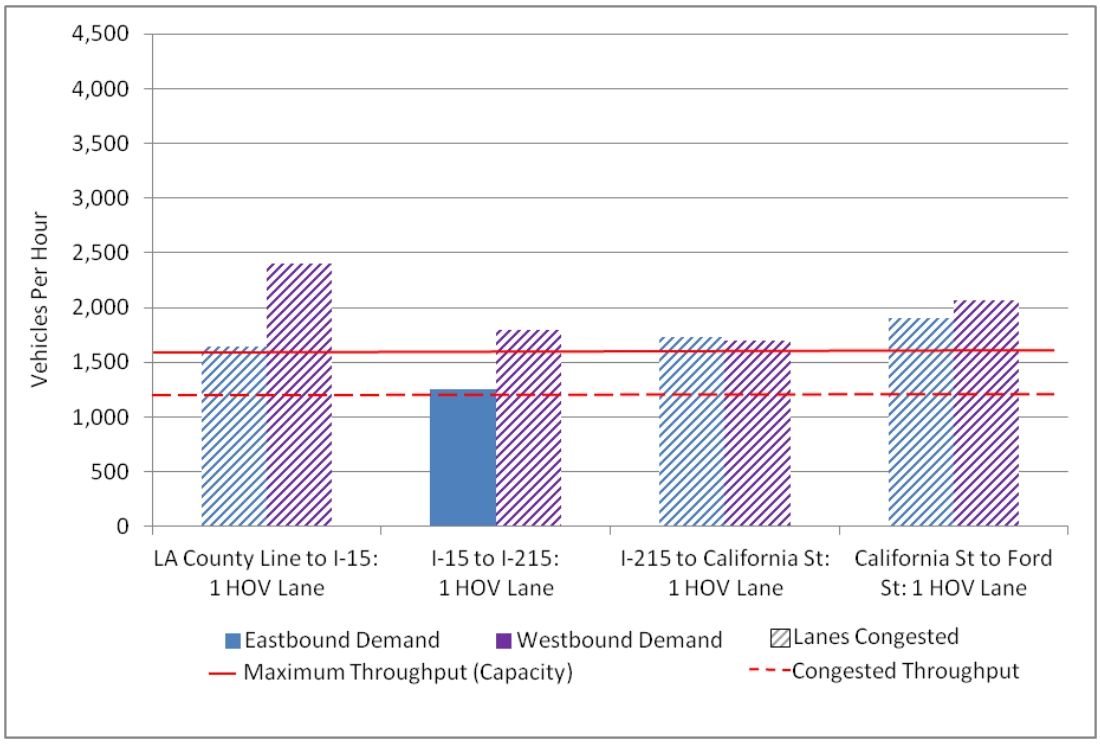

Figure 2-8 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: HOV Lanes

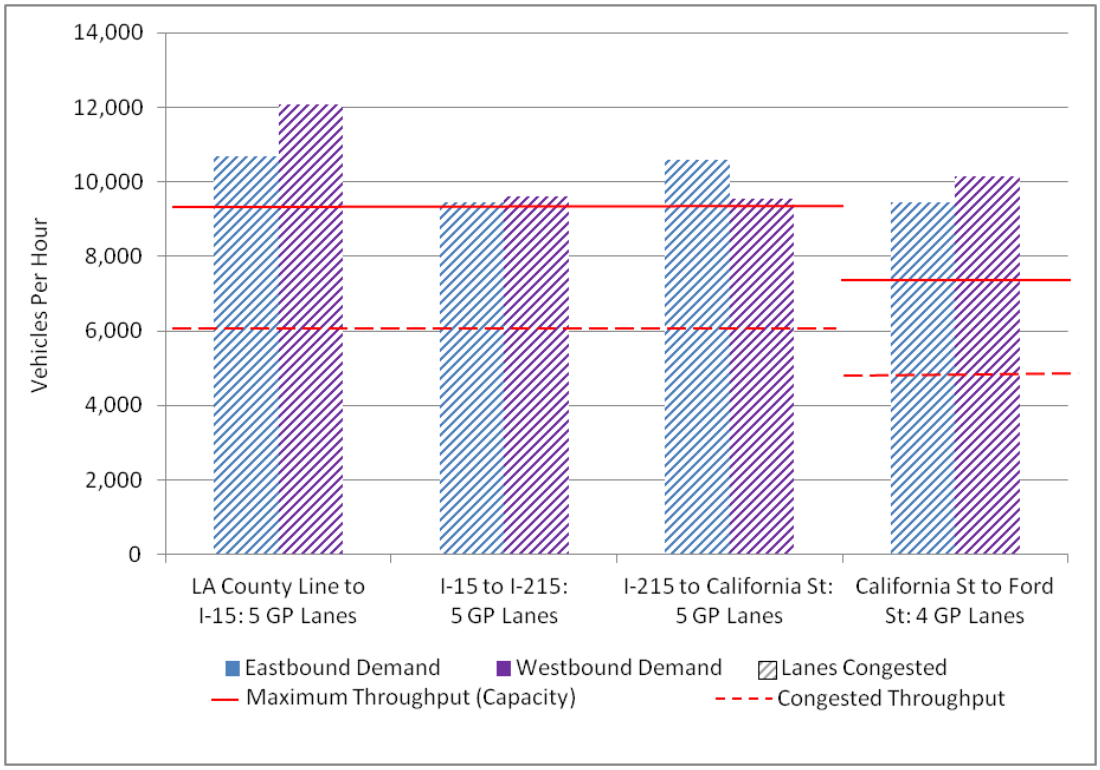

Figure 2-9 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: General Purpose Lanes

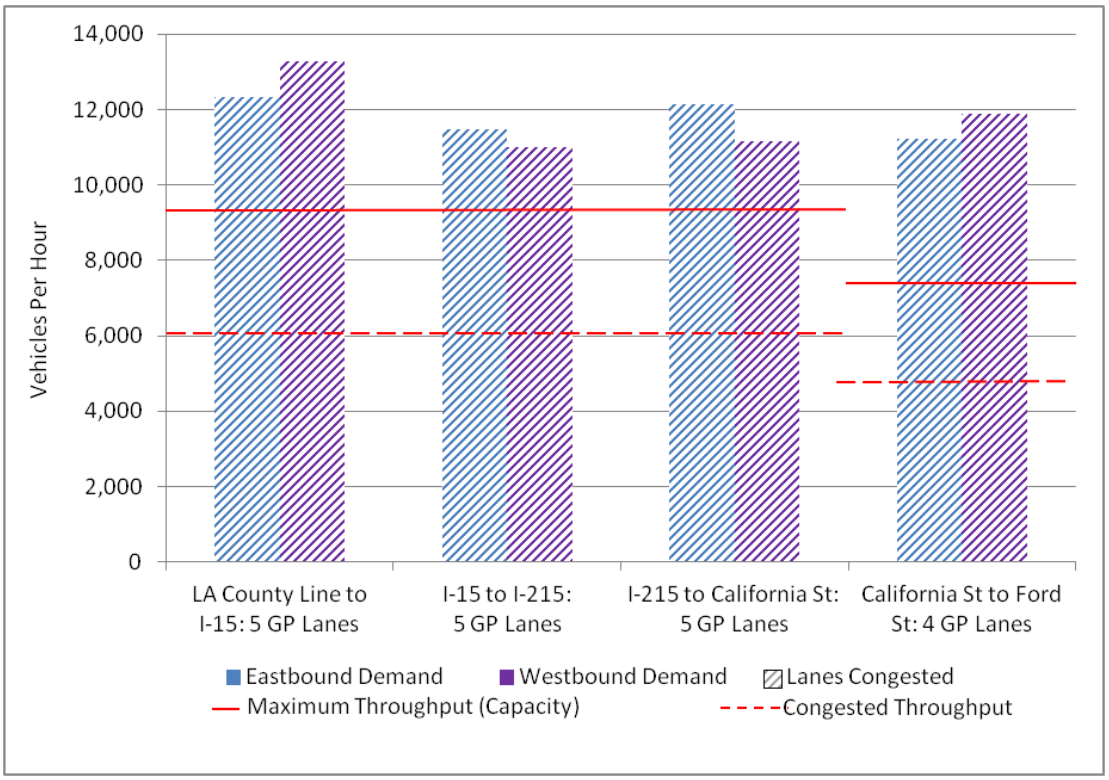

Figure 2-10 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 4: General Purpose Lanes

Single managed lanes do not provide the ability to pass. Even assuming continuous access to the HOV lane, congestion in the GP lanes during congested periods would make passing a slow HOV lane motorist by using the #1 GP lane problematic.

Because MAP-21 (Moving Ahead for Progress in the 21st Century) prohibits the conversion of a free GP lane to a tolled Express Lane (see Background Information section above), construction of Alternative 4 would preclude future management of more than the single HOV lane and implementation of the Express Lanes Network identified in the Southern California Association of Governments (SCAG) RTP. Management of the single HOV lane could be changed to a single Express Lane, but a single Express Lane has severely restricted benefits because of the inability to pass in the lane.

As such, Alternative 4 is not considered a prudent alternative for the following reasons:

- Provides limited congestion reduction;
- Precludes future management of the proposed GP lane because MAP-21 prohibits the conversion of free GP lanes to a tolled Express Lane, which would be in conflict with the purpose and need of accommodating long-term congestion management of the corridor;
- Provides problematic passing in the HOV lane, which cannot be done without merging into the GP lane, limiting throughput and reliability;
- Provides minimal enhancement of operations and improvement in trip reliability as measured by changes in corridor travel time; and
- Does not maximize an increase in throughput.

Based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SANBAG 10-Year Delivery Plan and the SANBAG Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 4 also contributes to the determination that the alternative is not a cost-effective option.

Alternative 5

Alternative 5 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands (as in Alternative 2) and add a second HOV lane from the LA/SB county line to SR-210. Figure 2-11 displays the I-10 lane configurations associated with Alternative 5.

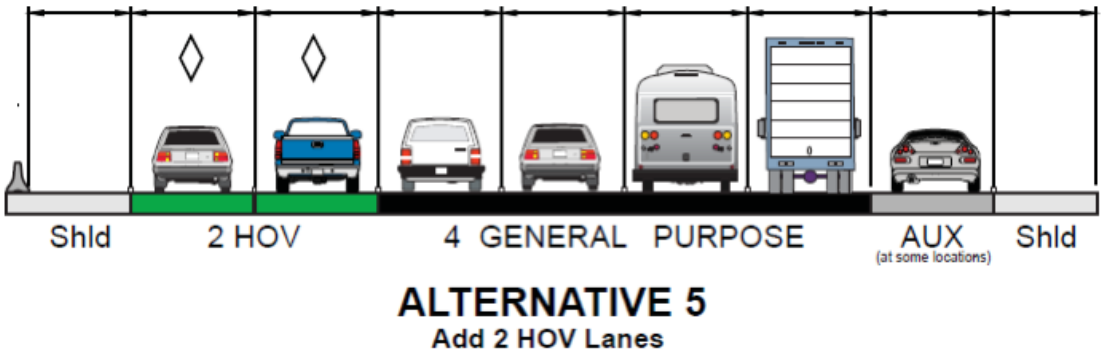

Figure 2-11 Alternative 5 – Two HOV Lanes in Each Direction

The benefits of this alternative are:

- Dual HOV lanes would more fully meet the demand for HOV capacity than a single HOV lane. The forecast demand for HOVs, as shown by Figure 2-12, will exceed the capacity of a single HOV lane (capacity of 1,600 vehicles per lane per hour) west of SR-210 in 2025 and on all segments in 2045 as shown in Figure 2-13.
- Provision of additional HOV capacity encourages carpooling.
- The easterly extension of the HOV lanes would meet the objective of providing a comprehensive HOV lane system.
- HOV trip reliability would be enhanced only in the segments where forecast HOV lane demand is not anticipated to exceed HOV lane capacity. Trip times would not be reliable WB from I-15 to the Los Angeles county line and in both directions between California Street and Ford Street, as shown by Figures 2-12 and 2-13.
- Flexibility would be provided to convert the dual HOV lanes to Express Lanes in the future.

Management flexibility is unavailable to improve lane utilization where substantial HOV capacity is unused or where HOV demand exceeds capacity.

Dual HOV lanes provide excess HOV capacity through 2045 in some locations, as shown in Figure 2-13.

In the area west of I-15, dual WB HOV lanes are anticipated to be degraded (based on demand exceeding capacity) upon opening in 2025. A degraded condition is also anticipated WB from Ford Street to California Street. Figure 2-12 shows that WB HOV demand in these segments exceeds capacity, which will result in congestion, low operating speeds, and the reduced throughput shown in Figure 2-12 with the dashed red line. Addressing degradation would require consideration of increasing the occupancy requirement to 3 persons per vehicle, which would result in substantial unused capacity in the HOV lane.

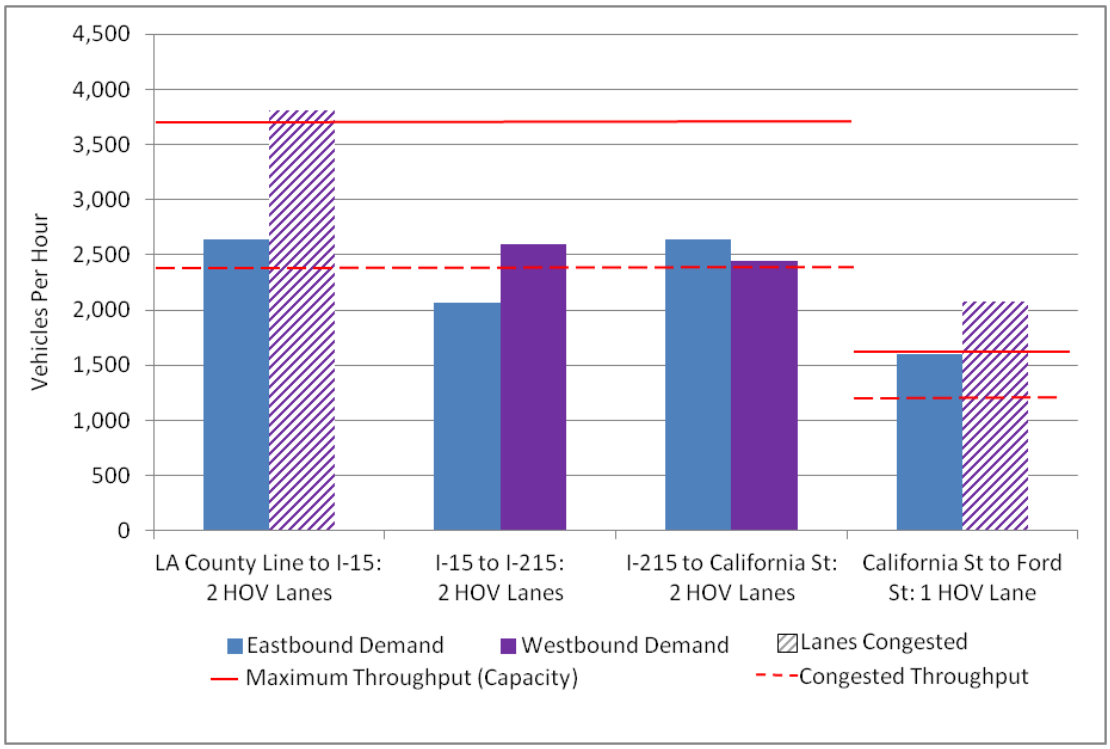

Figure 2-12 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: HOV Lanes

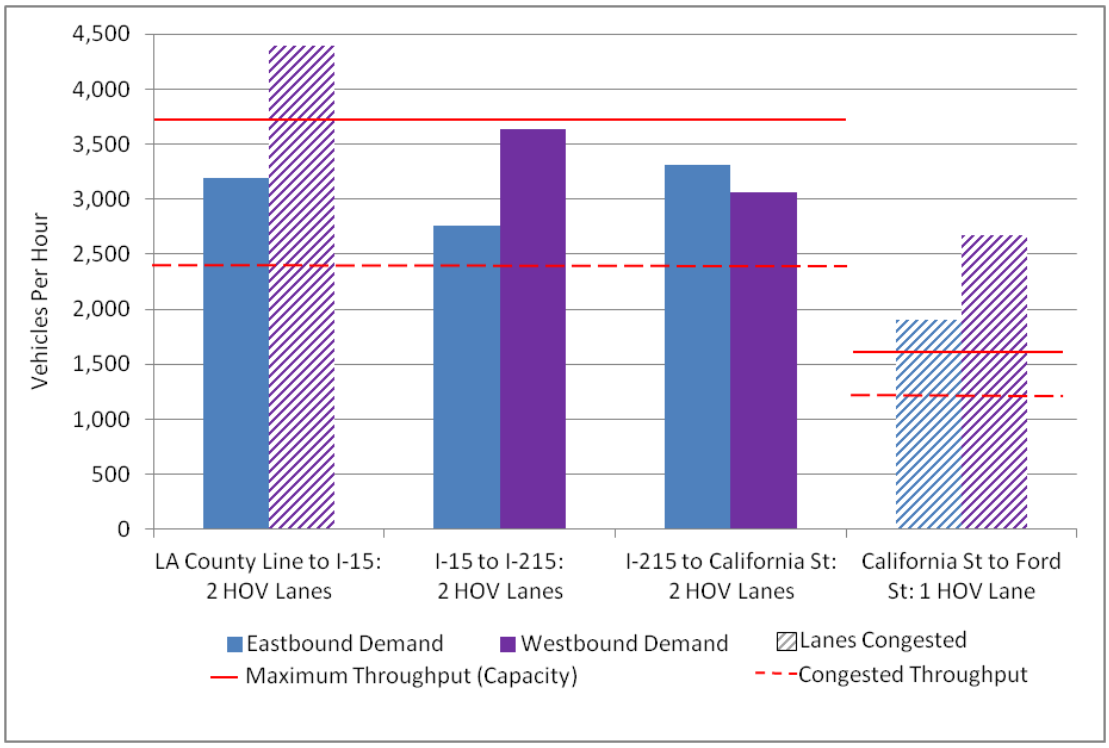

Figure 2-13 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: HOV Lanes

Figures 2-14 and 2-15 show the forecast GP lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The volume shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of the GP lanes in each segment, which is 1,850 vehicles per lane per hour or 7,400 vehicles per hour in the 4 GP lanes. When demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-14 and 2-15 with a dashed red line.

Alternative 5 is not considered an effective option in fulfilling the project purpose for the following reasons:

- Provides limited congestion reduction;
- Does not maximize an increase in throughput; and
- Provides minimal or no enhancement of operations and improvement in trip reliability as measured by the ability to traverse the corridor without encountering areas of substantial congestion.

In addition, based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SANBAG 10-Year Delivery Plan and the SANBAG Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 5 also contributes to the determination that the alternative is not a cost-effective option.

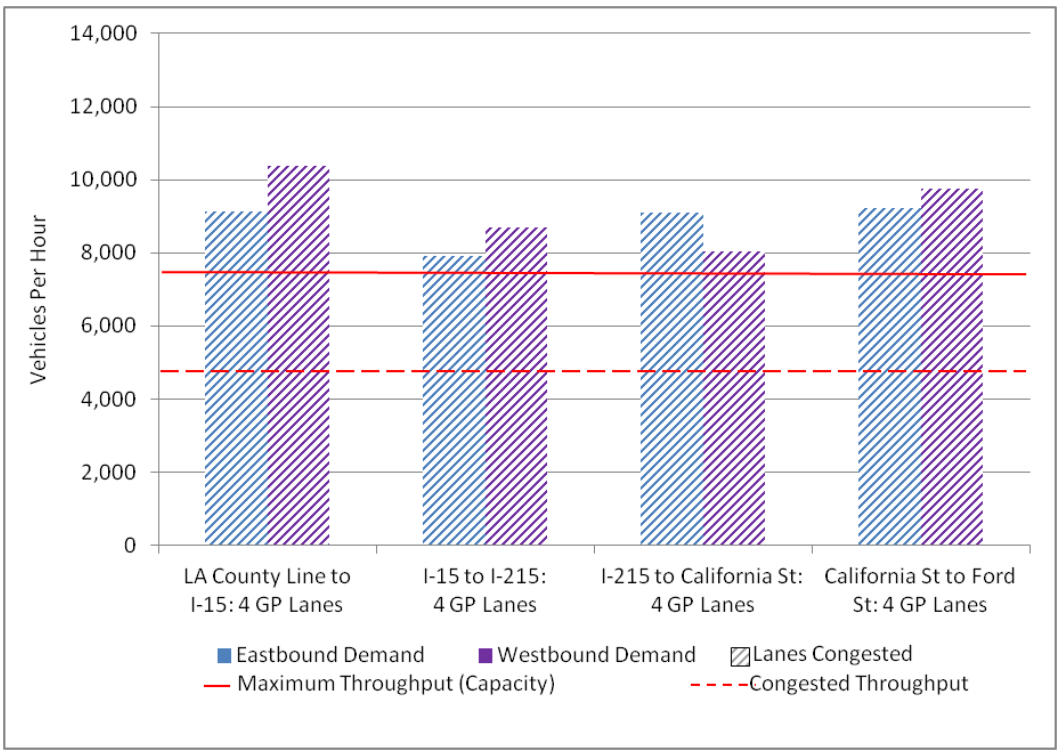

Figure 2-14 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: General Purpose Lanes

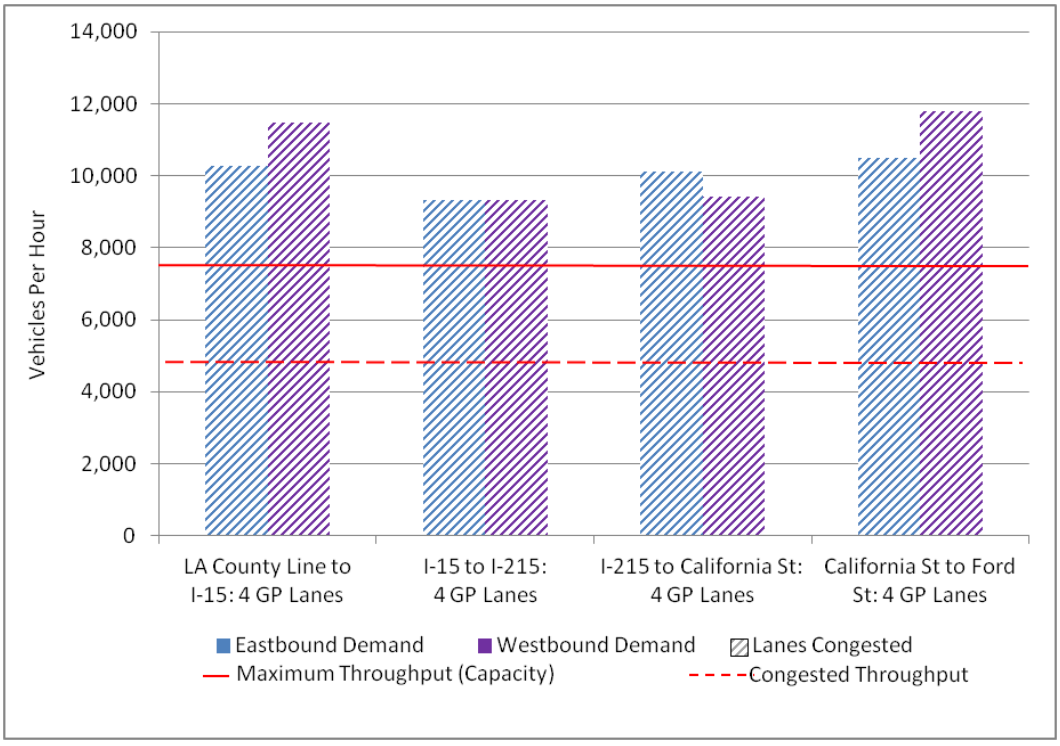

Figure 2-15 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 5: General Purpose Lanes

Alternative 6

Alternative 6 proposed the construction of two additional GP lanes in each direction of the I-10 corridor from the LA/SB county line to Ford Street in Redlands. Figure 2-14 displays the I-10 lane configurations associated with Alternative 6.

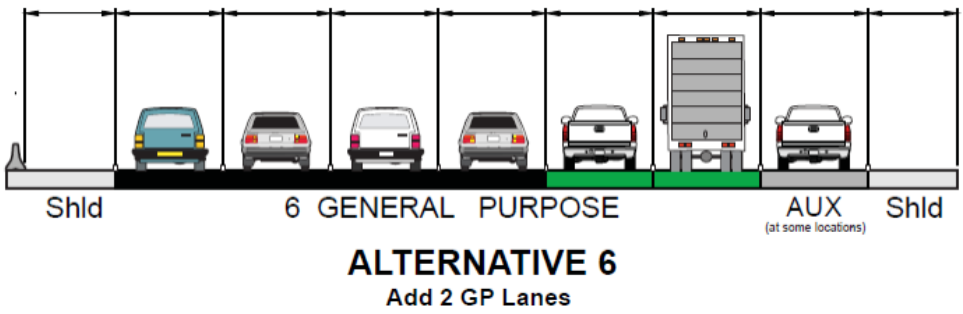

Figure 2-16 Alternative 6 – Two GP Lanes in Each Direction

The benefit of this alternative is:

- Construction of the two lanes would increase the capacity of I-10 within the project limits. Increased capacity would allow more traffic to use I-10. At opening year of this project alternative, congestion and traffic delay would be reduced along I-10.

Although this alternative would reduce traffic delay and congestion at opening year, Figure 2-17 shows that traffic demand during the peak hour is anticipated to exceed GP lane capacity in portions of three segments when opened in 2025. By 2045, all segments would have portions over capacity. Figures 2-17 and 2-18 show the forecast GP lane demand in the most heavily trafficked portion of each of the four segments of I-10 within the project limits. The forecast shown for each segment is the highest volume in that segment forecast for either the AM or PM peak hour. The figures also show with a solid red line the capacity of the GP lanes in each segment, which is 1,850 vehicles per lane per hour (or 9,250 vehicles per hour in the 5 GP lanes west of I-15 and east of California Street and 11,100 vehicles per hour in the 6 GP lanes between I-15 and California Street). For those segments where demand is forecast to exceed capacity, severe congestion is anticipated. Because severely congested lanes provide less traffic flow than free-flowing lanes, a throughput of 1,200 vphpl is used for severely congested conditions and is shown in Figures 2-17 and 2-18 with a dashed red line.

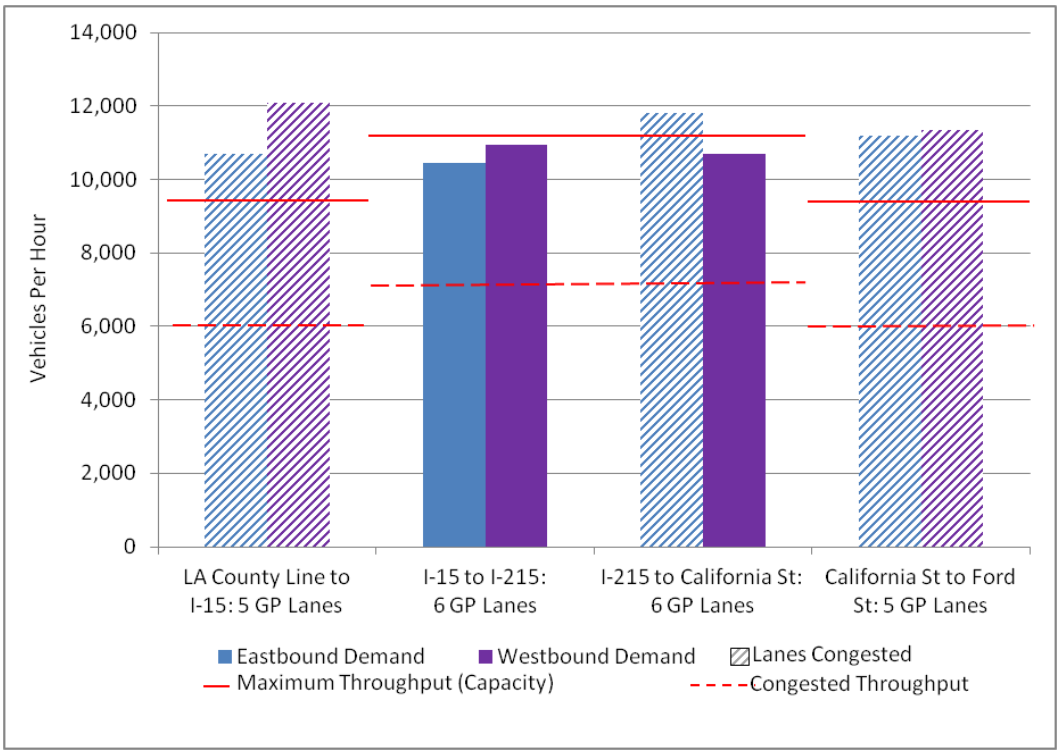

Figure 2-17 Maximum 2025 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 6: General Purpose Lanes

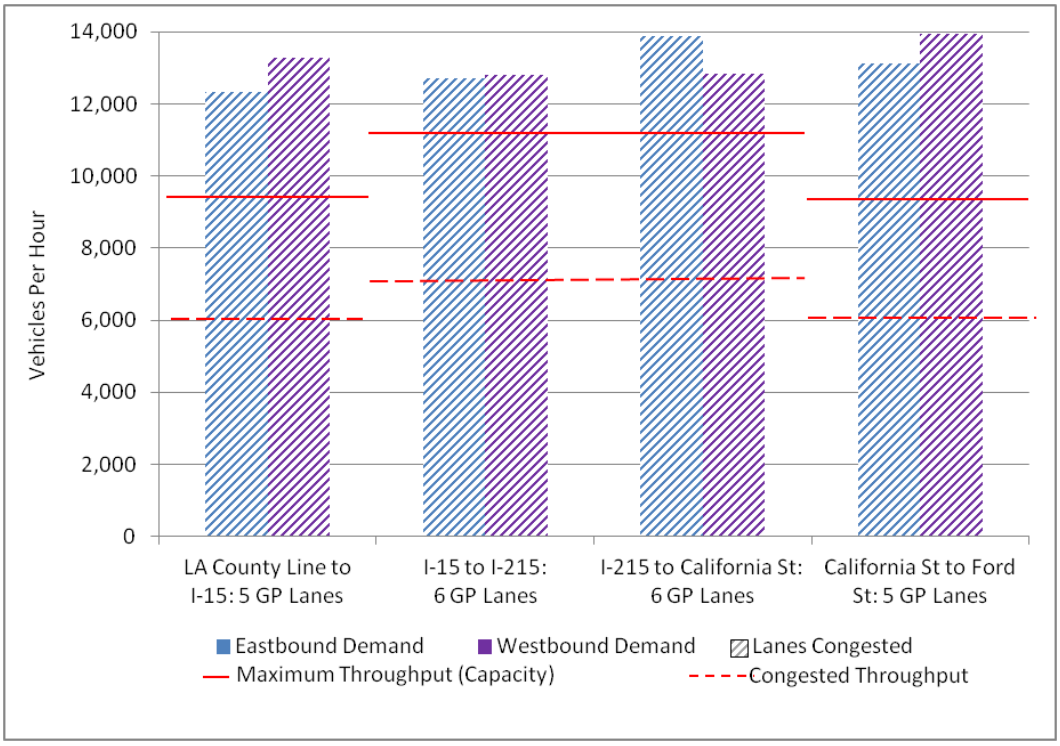

Figure 2-18 Maximum 2045 Forecast Segment Traffic Demand and Estimated Throughput, Alternative 6: General Purpose Lanes

Alternative 6 does not address the degradation in the existing HOV lane west of Haven Avenue. The degradation will deteriorate further over time as HOV traffic increases. The HOV lane is anticipated to exceed capacity in 2045 and be severely congested, with throughput of approximately 1,200 vehicles per hour, as shown in Figure 2-18 with a dashed red line.

The RTP project identified for the corridor is an HOV lane. Alternative 6 is inconsistent with that project definition.

Because MAP-21 prohibits the conversion of a free GP lane to a tolled Express Lane, construction of Alternative 6 would preclude future managed lanes. Implementation of the Express Lanes Network identified in the SCAG RTP would be effectively precluded because of the cost of acquiring the necessary additional ROW for two future additional lanes.

Alternative 6 is not considered an effective option in fulfilling the project purpose for the following reasons:

- Does not reduce congestion because it is forecast to have demand in excess of capacity and therefore be congested in three of the four segments between the Los Angeles county line and Ford Street on opening day and in all segments by 2045;
- Does not maximize an increase in throughput;
- Provides minimal enhancement of operations and improvement in trip reliability due to the extent of the corridor in which traffic demand exceeds capacity as noted in the previous bullet; and
- Because MAP-21 prohibits the conversion of free GP lanes to a tolled Express Lane, this alternative provides no additional managed lanes in the corridor and no potential to introduce additional managed lanes in the future. This precludes the ability to accommodate long-term congestion management of the corridor, which is inconsistent with the SCAG RTP Express Lane Network plans.

In addition, based on the preliminary cost estimate for this alternative, less than 50 percent of the cost could be funded with available funding sources identified within the SANBAG 10-Year Delivery Plan and the SANBAG Measure I Strategic Plan; therefore, the high unfunded cost of Alternative 6 also contributes to the determination that the alternative is not a cost-effective option.

TSM/TDM Alternative

A TSM/TDM Alternative was evaluated. Although TSM and TDM measures alone do not satisfy the purpose and need of the project and are therefore not a viable option, some of the TSM and TDM measures may be incorporated into each of the build alternatives for the proposed project and are included in Section 2.2.1.1, Common Design Features of the Build Alternatives.

The TSM/TDM Alternative is not considered a viable option because it does not fulfill the project purpose stated in Chapter 1 for the following reasons:

- TSM consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. Because these options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes, this alternative would provide only minimal congestion reduction.
- The TSM/TDM Alternative does not maximize throughput because no additional through lanes are provided.
- Minimal enhancement in trip reliability would be provided.
- Long-term congestion management of the corridor would not be accommodated because existing capacity does not meet the projected demand.

2.3 Permits and Approvals Needed

Table 2-12 shows the permits, reviews, and approvals would be required for project construction common to both build alternatives:

Table 2-12 Required Permits and Approvals

Agency	Permits/Approval	Status
Federal Agency Permits/Approvals		
United States Army Corps of Engineers (USACE)	Section 404 Permit for filling or dredging waters of the U.S.	Application for Section 404 Permit anticipated after Final EIR/EIS distribution.
FHWA	Project-Level Air Quality Conformity Finding	FHWA concurrence prior to approval of Final EIR/EIS and ROD.
	Draft Project Management Plan, Draft Initial Financial Plan, and first Cost Estimate Review	Will be submitted to FHWA prior to approval of the Final EIR/EIS to meet FHWA Major Project requirements.
United State Fish and Wildlife Service (USFWS)	Section 7 Consultation and Biological Opinion	Section 7 consultation will be completed before the FED is approved.

Table 2-12 Required Permits and Approvals

Agency	Permits/Approval	Status
State Agency Permits/Approvals		
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement	Application for Section 1602 agreement anticipated after Final EIR/EIS distribution.
Regional Water Quality Control Board (RWQCB), Region 8 (Santa Ana)	Section 401 Water Quality Certification	Application for Section 401 certification anticipated after Final EIR/EIS distribution.
State Water Resources Control Board (SWRCB)	Construction General Stormwater and Caltrans' Statewide National Pollutant Discharge Elimination System (NPDES) Permits	Project design plans will comply with RWQCB General Orders No. 2009-0009-DWQ (NPDES Permit No. CAS000002) and 99-06-DWQ (NPDES Permit No. CAS000003).
California Public Utilities Commission (CPUC)	Compliance with CPUC General Order 131-D regarding relocation electrical lines 50 kilovolts (kV) or greater	Prior to relocation of electrical lines 50 kV or greater, approval must be obtained from CPUC.
	Approval of the project, based on review of the Railroad Construction and Maintenance Agreement	Must be completed prior to construction within or above railroad ROW.
UPRR and BNSF	Memorandum of Understanding and Construction and Maintenance Agreement with the Railroad	Must be completed prior to construction within or above railroad ROW.
County Agency Permits/Approvals		
San Bernardino County Flood Control District (SBCFCD)	Encroachment Permit	Letter or permit will be obtained during PS&E or construction within SBCFCD property.
Utility Company/County and Municipal Service Provider Permits/Approvals		
Atchison, Topeka and Santa Fe Railway, City of Colton, Southern California Edison, American Cablevision, AT&T, Comcast, Level 3 Communications, Sprint, SUNESYS, Time Warner Cable, Verizon, Western Union Telegraph, Chino Basin Municipal Water District, City of Chino Hills, City of Montclair, City of Ontario, City of Riverside, City of San Bernardino, City of Upland, Cucamonga Valley Water District, Fontana Public Works, Fontana Water Company, Marygold Mutual Water Company, Metropolitan Water District, Monte Vista Water District, Riverside	Approval to relocate, protect in place, or remove utility facilities	Prior to any construction within utility conflict areas.

Table 2-12 Required Permits and Approvals

Agency	Permits/Approval	Status
Highland Water Company, San Antonio Water Company, San Gabriel Valley Water Company, Santa Ana Watershed Project Authority, Southern California Water, Southern Pacific Transportation Company/UPRR, Water Facilities Authority, West San Bernardino Water District, West Valley Water District, City of Fontana, City of Loma Linda, City of Rialto Sewer, Western Pacific Sanitation Company, California-Nevada Pipeline, Kinder Morgan, Southern California Gas, Union Carbide Company		
Local Jurisdiction Permits/Approvals		
Cities of Pomona, Montclair, Upland, Claremont, Ontario, Fontana, Rialto, Colton, San Bernardino, Loma Linda, and Redlands	Freeway Agreements	Agreements will be concluded with each of the cities in which project construction will take place.
Cities of Montclair and Redlands, County of San Bernardino, and Ontario-Montclair School District	Section 4(f) Technical Study finding	Concurrence with finding of impacts to Section 4(f) resources (parks) prior to Preferred Alternative being identified.

Table 2-13 shows the permits, reviews, and approvals that would be required for project construction of Alternative 3 only:

Table 2-13 Additional Required Permits and Approvals for Alternative 3

Agency	Permits/Approval	Status
Federal Agency Permits/Approvals		
FHWA	Tolling Authority (Alternative 3 Express Lanes)	If Alternative 3 is identified as the Preferred Alternative, FHWA approval is required to operate a toll facility on the Interstate Highway System.
State Agency Permits/Approvals		
California State Legislature	Authority to Operate Toll Facility (Alternative 3 Only)	SANBAG is currently seeking legislative authority for San Bernardino County with Assembly Bill 914. The bill, if passed, would grant SANBAG the authority to toll on the I-10 and I-15 corridors if Alternative 3 is identified as the Preferred Alternative.
SANBAG	Maintenance, Operations, and Law Enforcement Agreements (Alternative 3 only)	Maintenance, toll operations, and law enforcement agreements between SANBAG, the toll operator, CHP, and Caltrans will be required if Alternative 3 is identified as the Preferred Alternative. These will be obtained prior to beginning operations.